Original article

Development of Dhammanamai Health Promotion Handbook on Stress Management for Students in Kanchanabhishek Institute of Medical and Public Health Technology

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Abstract

Background: Stress has a powerful impact on individual's mind and well-being. Dhammanamai, a principle in Thai traditional medicine, has been recognized to reduces stress. However, scientific reports about the benefits of dhammanamai are limited. This study aimed to 1) develop dhammanamai health promotion handbook on stress management for students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT), 2) compare the knowledge on stress management before and after using the handbook and 3) evaluate satisfaction of subjects after using the handbook. **Methodology:** This research and development study was divided into four phases: 1) situational analysis to gather ideas for handbook, 2) development of handbook, 3) trial of handbook and 4) satisfaction evaluation of handbook. Participants included six lectures and six students in situational analysis phase. Ninety students in KMPHT were selected by purposive sampling to participate in the trial phase. The ninety subjects were directed to use the developed book for three days. Data was collected using focus group discussion questions, a media quality assessment form, a quiz on stress management knowledge and satisfaction evaluation questionnaire. We analyzed data using content analysis, descriptive analysis and paired t-test. **Results:** The situational analysis revealed that participants desire the new media on stress management based on dhammanamai principle to be a graphic book with more pictures and less text. Therefore, we developed dhammanamai health promotion handbook containing three sections: 1) basic knowledge about stress, 2) stress management with dhammanamai, and 3) alternatives methods for stress management. The average score of knowledge about stress management (scale = 0-20) after using the developed handbook ($\bar{x}$ = 18.16) was significantly higher than before using ($\bar{x}$ = 12.86) ($p<0.001$). The level of overall satisfaction (scale = 0-5) on the handbook was high ($\bar{x}$ = 4.40). The aspect of the handbook that earned the highest satisfaction was language ($\bar{x}$ = 4.45), followed by design ($\bar{x}$ = 4.40). Pictures earned the lowest satisfaction ($\bar{x}$ = 4.36).

Key words: Dhammanamai, Health promotion**,** Stress management

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Introduction

Stress affects everyone and has a powerful impact on individual' s mind, health and well-being. Stress is defined as physiological and psychological responses to environmental needs that occurs after people feel that they are unable to cope with their needs adequately (Lewis & Shaw, 2007) . Thai traditional medicine incorporates Buddhism into principle of maintaining balance and good health. The practice of Dhammanamai for optimum health encapsulates these practices. It composes of healthy body (*Kayanamai*), health mind (*Jitanamai*) and healthy lifestyle (*Chivitanamai*). To keep a healthy body, one should eat good food, especially fruit and vegetables to balance individual' s element and excercise adequately. Thai traditional stretching exercise which is called " rue-si-dud-ton" help to stimulate the blood flow in the body and reduce stress. In addition, an individual should keep a healthy mind or *Jitanamai* by practicing meditation and keep a healthy lifestyle by living on the middle path, called *Chivitanamai* (Somchai. N, 2014) . A study by Prapa Pithaksa (2012) explored the association between a Thai traditional medicine Dhammanamai health promotion program and quality of life in diabetes patients in Kantharalak district, Si Sa Ket Province, this research found that the Dhammanamai health promotion program was a good option for improving the quality of life in terms of environmental, social and emotional feelings of people with diabetes. Moreover, Dhammanamai has been successfully incorporate into Thai traditional medicine treatment of disease as well as improving quality of life of healthy people (Prasert Mogkaew, 2019).

Many students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT) revealed that they experienced stress during their study. Interestingly, students considered stress as the greatest barrier to their academic performance and the greatest health impediment during the academic year. Balancing class schedules and homework schedules, preparing for exams, taking exams, and balancing personal life with the demands of school were all potential stress triggers in students' life (Araas, 2008). Increased levels of stress may lead to poor academic performance, burn-out, and the development of inadequate coping mechanisms (Lewis & Shaw, 2007) . Burn-out is defined as emotional exhaustion and diminished interest in daily activities (Gibbons, 2010) . Participants in the study reported that the stress caused them to feel indifference, helplessness, and as though they had lost control. In terms of cognitive effects, participants reported a decrease in focus and concentration during periods of stress. The stress also resulted in physiological discomfort, including weight changes, chest pain, fear, panic, nausea, and lack of sleep. The emotional effects of stress were reported as crying, avoidance, withdrawal, and consumption of increased levels of alcohol (Gibbons, 2010).

Therefore, developing a self-management tool based on dhammanamai principle to alleviate stress would provide great benefit for students in order to increase their study performance and quality of life. This research aimed to 1) develop dhammanamai health promotion handbook on stress management for students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT), 2) compare the knowledge on stress management before and after using the handbook and 3) evaluate satisfaction of subjects after using the handbook. The findings from this study could provide a valuable tool for better understanding on stress management using dhammanamai principle that students could adopt and practice throughout their student lives.

Research Methodology

This research was a research and development study conducted at Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT). The study was divided into four phases: 1) situational analysis phase, 2) development of dhammanamai health promotion handbook on stress management phase, 3) trial phase and 4) satisfaction evaluation phase.

Phase 1: Situational analysis

In this step, focus group discussions (FGD) were carried out using FGD question guideline in two groups of participants: 1) six Thai traditional medicine lecturer teaching at KMPHT and 2) six KMPHT students from different departments and class years. The data collected from situational analysis was then analyzed by content analysis. Results from the content analysis was used as input information to design dhammanamai health promotion handbook on stress management for students in KMPHT in the next step.

Phase 2: Development of the Dhammanamai health promotion handbook on stress management

The dhammanamai health promotion handbook on stress management was developed in this phase according to information derived from situational analysis phase. In this stage, the developed handbook was assessed by three media experts using media quality assessment form covering four aspects of the handbook: 1) content and presentation, 2) pictures, 3) language, and 4) design.

Phase 3: Trial

Ninety participants were recruited in this stage using purposive sampling technique. Inclusion criteria of the sampled students included: 1) Aged 18-30 years 2) A student who was currently studying in the first to third year of high vocational education program in Medical Audiology, high vocational education program in Medical Record, Bachelor's degree of public health program in Medical Record and Bachelor's degree of Thai traditional medicine program in KMPHT and 3) willingness to cooperate in data collection and participate in all activities of research process. The tools used in this phase included the developed handbook and twenty-question quiz on stress management with dhammanamai. The quiz was quality tested using Kuder-Richardson Method (Webster, 1960) earning the reliability value of 0.803. The discrimination and difficulty of each question in the quiz ranged from 0.2-0.8 which implied that the quiz was qualified. The subjects were given fifteen minutes to do the quiz to assess their knowledge before using the developed handbook and after three days of trial phase. The descriptive statistics including mean and standard deviation were applied to characterize the independent variables presenting in. Furthermore, the paired t-test with a level of significance at p-value of 0.001 was used to compare participants' knowledge score before and after using the dhammanamai health promotion handbook on stress management for students in KMPHT.

Phase 4: Satisfaction evaluation

Satisfaction of ninety subjects with the Dhammanamai health promotion handbook on stress management for students in KMPHT was evaluated using satisfaction evaluation questionnaire. The questionnaire was divided into two parts: 1) baseline demographic characteristics and satisfaction of users covering five aspects (content and presentation, pictures, language, design, and application). Subjects could rate their satisfaction with the specific aspect in the questionnaire on a scale from 0 to 5. The satisfaction evaluation questionnaire was tested for content validity and reliability by checking if the Index of item objective congruence (IOC) greater than 0.5 and if Cronbach' s Alpha Coefficient higher than 0.80. The questionnaire was qualified as the IOC of all items were higher than 0.5 (0.5-1) and Cronbach's Alpha Coefficient was 0.959. The descriptive statistics were applied to analyzed data presenting in mean and standard deviation.

Ethical Approval

This study was officially approved by the Institutional Review Board (IRB) in Kanchanabhishek Institute of Medical and Public Health Technology coded as KMPHT-59020113.

Results

Phase 1: Situational analysis

Focus group discussions carried out among two groups of participants, a lecturer group and a student group revealed that the current education on stress and stress management of students were not ambiguous as it was usually added into classroom lecture. Most common stress management techniques for students included watching

movies, listening to music, playing game and resting. The existing sources for information on stress and stress management education were not attractive and included: the Department of Mental Health website; TV programs on Dhamma, mental health, and natural medicine; and different type of media (magazines, books, leaflets and posters) Therefore, participants requested a new form of media was needed such as a graphic book or cartoon which contained more pictures and less text. The book should be clear, accurate, easy to understand, not too academic, have less pages, be colorful and interesting, and have an appealing cover. The main content should contain stress assessment, stress measurement, knowledge on Dhammanamai and its application, and other alternative stress managements related to Thai traditional medicine.

Phase 2: Development of Dhammanamai health promotion handbook on stress management

The dhammanamai health promotion handbook on stress management for students in KMPHT was drafted and proofread by Thai traditional medicine experts. The final draft was evaluated by media experts. The resulting handbook was 20x20 cm in size, had 36 pages containing infographics and three sections of contents; (1) Basic knowledge about stress, (2) Stress management with Dhammanamai and (3) alternative ways for stress management.

Phase 3: Trial

In the trial phase, ninety subjects from Kanchanabhisek Institute of Medical and Public Health Technology were instructed to use the dhammanamai health promotion handbook on stress management for students in KMPHT for three days. The subjects were asked to perform a test before and three days after using the developed handbook, to assess their knowledge on stress and stress management using Dhammanamai. In this test, the range of scores possible was 0 (lowest) to 20 (highest). Table 1 showed that before trial, the knowledge of most subjects (54.5%) was at an intermediate level (score =7-13). After three days of using the handbook, the knowledge of all subjects (100%) was at a high level (score =14-20).

Table 1. Frequency and percentage of pre-test and post-test score of subjects using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

Test	Score	Level	Frequency	Percentage
Pre-test	0-6	Low	1	1.1
	7-13	Intermediate	49	54.5
	14-20	High	40	44.4
Total			**90**	**100.0**
Post-test	0-6	Low	0	0.0
(after 3 days)	7-13	Intermediate	0	0.0
	14-20	High	90	100.0
Total			**90**	**100.0**

Table 2 shows the comparison between pre and post-test results. The average score of knowledge after using the developed handbook for three days($\bar{x}$ =18.16) was significantly greater than the average score before using the handbook ($\bar{x}$ = 12.86) using the level of significance of 0.001.

Table 2. The average score of knowledge before and after using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

	$\bar{x}$	S.D.	t	P-value[b]
Pre-test	12.86	2.51	-21.41	<0.001
Post-test	18.16	1.48		

[a] Range of knowledge score is 0 (lowest possible) to 20 (highest possible).
[b] P-value was less than 0.001.

Phase 4: Evaluations

After using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology, the satisfaction of subjects was evaluated. Baseline demographic characteristics revealed that the majority of subjects were female (73%), at the age of 19 (47.8%), studying in year 1 (50%), and studying in high vocational education program in Medical Records (36.7%).

Table 3 showed that the level of overall satisfaction of subjects on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (Table 3) was high ($\bar{x}$ = 4.40). Looking at the broad categories that the handbook was evaluated on, the aspect that earned the highest satisfaction was language ($\bar{x}$ = 4.45), followed by design ($\bar{x}$ = 4.40). While as a broad category, pictures obtained the lowest satisfaction ($\bar{x}$ = 4.36). Considering the satisfaction of subjects in specific aspects of each broad category, the satisfaction in the application of handbook gained the highest satisfaction ($\bar{x}$ = 4.54), followed by an interesting cover ($\bar{x}$ = 4.52) while the order of the content earned the lowest satisfaction ($\bar{x}$ = 4.27).

Discussion and Conclusions

In this study, the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology was developed according to the results from focus group discussions. Focus group discussions suggested that the handbook should be a graphic or cartoon book containing more pictures and less text. These suggestions conformed to concepts of informational graphics design (Tessana, 2012) in which summarized information and ideas are transformed into text and graphics using drawing, symbols, charts, pictures, and diagrams to illustrate the information. The advantages of these design principles were that the media could deliver message to readers promptly and clearly with no need of a presenter to explain the concepts further. In our study, the developed handbook on stress management was designed and validated by Thai traditional medicine experts. It was then assessed by media experts using evaluation form examining 5 aspects according to media assessing criteria for education outlined by Promyong (2007): content, language, illustration, medical application, and type of media.

Table 3. Mean ($\bar{x}$) standard deviation (S.D.) of level of satisfaction of users on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

	Satisfaction level		
	$\bar{x}$ [a]	S.D.	Level
Content and Presentation			
1. The form of presentation is suitable	4.43	0.56	High
2. Series of presentation is suitable	4.27	0.58	High
3. The presentation is interesting	4.37	0.68	High
4. The content is suitable for the student	4.39	0.71	High
5. The content is clear and easy	4.41	0.63	High
6.Overall content is consistency	4.33	0.56	High
Average	**4.38**	**0.43**	**High**
Pictures			
7. Pictures are displayed appropriately and conform with objectives	4.37	0.63	High
8. Size and details are appropriate	4.32	0.67	High
9. Pictures are interesting	4.43	0.70	High
10. Pictures' resolution is appropriate	4.32	0.73	High
Average	**4.36**	**0.52**	**High**
Language			
11. The content are in correct language	4.44	0.58	High
12. The language is clear and easy to understand	4.50	0.60	Highest
13. Words of choice are appropriate	4.40	0.60	High
Average	**4.45**	**0.50**	High
Design			
14. Size and background of letters are appropriate	4.39	0.67	High
15.Color is appropriate	4.44	0.66	High
16. The handbook is well designed	4.31	0.65	High
17. The cover is interesting	4.52	0.65	Highest
Average	**4.40**	**0.52**	**High**

Table 3. Mean ($\bar{x}$), standard deviation (S.D.) and level of satisfaction of users on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90) (Cont.)

	Satisfaction level		
	$\bar{x}$	S.D.	Level
Application			
18. The handbook meets individual's desire	4.34	0.62	High
19. The handbook is easy to use, collect and maintenance	4.41	0.58	High
20. Overall satisfaction for the application	4.54	0.60	Highest
Average	**4.43**	**0.51**	**High**

[a] Range of satisfaction score was 0 (lowest possible) to 5 (highest possible)

The pre and post-test knowledge score test results revealed that the knowledge of most subjects was at an intermediate level prior to using the handbook. After three days of using the handbook, the knowledge of all subjects was at a high level. The average score of knowledge after using the handbook was significantly higher than before, using the significance level of 0. 001. The results suggested that the developed handbook could be applied to effectively educate students about stress and stress management. Our results were similar to a study conducted by Income (2016) in which researchers developed a health promotion handbook about heart disease awareness for clients in Buddhasothon hospital. The knowledge score about heart disease awareness after using the handbook was significantly higher than before, using at a significance level of 0. 05. The overall satisfaction of users in this study was at a high level, which is also like the results in the study by Income (2016).

The results from Income's study reported that the clients in Buddhasothon hospital found the health promotion handbook about heart disease awareness interesting for users (Income, 2016). It was noteworthy that in our study the aspect that earned the highest satisfaction was language, followed by design. However, pictures obtained the lowest satisfaction. The pictures were considered interesting. But participants reported that the size, details and resolution of the picture needed to be improved. We concluded that the *dhammanamai* health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology was a useful tool in stress management for KMPHT students. A hard copy of this handbook is in KMPHT library for students who might seek for stress management techniques. It could also be developed further for other groups of people who suffered from stress either in the form of hard copy or online tools.

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