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The effects of an educational program on knowledge, attitudes and intentions regarding condom and emergency contraceptive pill use among Thai female university students

Saowanee Thongnopakun, Tepanata Pumapaibool and Ratana Somrongthong
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Abstract

Purpose – University students who have low knowledge, attitudes and intentions regarding the prevention of unintended pregnancies may experience higher rates of unintended pregnancies. An educational program was developed based on the self-efficacy theory and peer-led education to improve unintended pregnancy problems among university students. The purpose of this paper is to examine the effect of an educational program on knowledge, attitudes and intentions regarding the use of condoms and emergency contraceptive pills among Thai university students.

Design/methodology/approach – The effectiveness of the educational program was tested by a quasi-experimental study with a pre- and post-test design. The study was conducted between September and October 2017. Multistage sampling was used to recruit 73 Thai female university students, including 36 students in the intervention group and 37 students in the comparison group. The intervention group received an eight-week educational program, while the comparison group did not. A self-administered questionnaire was used to assess the improvement of knowledge, attitudes and intention regarding condom and emergency contraceptive pill use. Descriptive statistics, paired samples t-test, Wilcoxon test and Mann-Whitney tests were used for data analysis.

Findings – Most participants in both groups had sexual intercourse. After the end of the program, the before-after mean score of the intervention group’s knowledge (8.0, 11.0), attitudes (29.4, 32.4) and intention (17.4, 20.4) were significantly increased (p-value < 0.001). Post-intervention, there were statistically significant differences in knowledge scores (p-value < 0.001) and intention scores (p-value = 0.04) between the intervention group and the comparison group.

Originality/value – This educational program increases knowledge and intention but does not influence attitudes toward using condoms and emergency contraceptive pills.

Keywords Educational program, Peer-led education, Condom and emergency contraceptive pills use, Unintended pregnancy, Pregnancy in adolescence-prevention and control

Paper type Research paper

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Conflict of interest: the authors report no conflicts of interests in relation to this work.

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Background
Unintended pregnancies are an increasing public health problem among youth in both developed and developing countries, including Thailand[1, 2]. Unintended pregnancies are related to individual characteristics, child marriage, gender inequality, poverty, sexual violence and coercion, obstacles to human rights, age at first sexual intercourse and limited knowledge, which influences attitudes toward and use of contraception[3, 4]. In 2014, the estimated number of worldwide unintended pregnancies among teens aged 15–19 was 16m and the birth rate 49 per 1,000[5]. This rate has not decreased[5]. The birth rate among female Thai adolescents aged 15–19 was 44.8 per 1,000[6, 7], which is higher than the Asia-Pacific region[4]. According to the 2013 Abortion Surveillance in Thailand Report, two-thirds of Thai female adolescents had their first sexual intercourse at age 17, and more than half did not use contraception[8]. In 2015, the Ministry of Public Health, Thailand, reported 3,286 births in the Chon Buri province. The birth rate among girls aged 15–19 was 66.3 per 1,000, the highest in Thailand[9]. Most female adolescents are unaware of the consequences of unprotected sex[10]. The lack of knowledge about reproduction and contraception paired with modern lifestyles and open relationships contribute to a high prevalence of unintended pregnancies[11]. Unintended pregnancies significantly affect maternal and child health, leading to higher rates of depression, school dropout, economic problems, preterm births and low birth weight[12]. There is thus a need to increase pregnancy-prevention behaviors. A previous study found that 59.8 percent of teens did not use condoms during their first sexual encounter and 24.7 percent always use emergency contraceptive pills[13]. No previous studies have tested the effect of educational programs on knowledge, attitudes, and use of condoms and emergency contraceptive pills among Thai university students. This study examines contraception use among Thai university students and the effect of an educational program on their knowledge, attitudes and intentions regarding contraception. This study’s educational program was designed based on a self-efficacy theory and peer-led education. The research assistant was of a similar age and lived in the same context as participants, creating a comfortable climate for data collection.

Methodology
Study design
The quasi-experimental design in this study comprised of an intervention group and a comparison group with pre-post-test design. The study was performed from September-October 2017.

Study procedure
The sample size was calculated using the formula of Chirawatkun[14] to determine the number of Thai female university students in the comparison and intervention groups. The alpha (α) for the test was set at 0.05 to achieve a power of 0.80. The difference in the means for intention to prevent unplanned pregnancy among early adolescents before and after education[15] was 3.46. In total, 37 students were needed for each group. A multistage sampling technique was used to recruit the participants. First, two of the four government universities in Chon Buri province were purposively selected for being located in the same urban area. Second, 37 Thai female students in each university were randomly recruited by proportional size from two faculty clusters: humanities and social science, and science and technology faculties. Recruitment criteria included: Thai female university students in their first to fourth year of undergraduate study; having a boyfriend on the date they signed the consent form for the study; ability to participate fully over the eight weeks of the study; and
neither pregnancy history in the past nor current pregnancy. In order to control contamination, the material or electronic content was not given to participants. Moreover, the intervention university was 16 kilometers away from the comparison university.

The educational program for knowledge, attitudes and intentions on using condoms and emergency contraceptive pills

The educational program consists of seven activities carried out once a week for eight weeks. The learning methods included lectures, group discussions, edutainment, brainstorming, live modeling and role playing. The seven activities were as follows: introduction to the educational program; “Knowing condoms and emergency contraceptive pills”; “Existing solution selection”; “Communication and creating understanding”; “Realizing self-values”; “Life’s path”; and “Verifying if the information is reliable.”

Three fourth-year students of the Public Health faculty who had been educated in the basic principles of prevention in their third-year curriculum were recruited to be voluntary research assistants. They were trained on contraceptives, condoms and emergency contraceptive pills, health literacy and self-efficacy theory, teenage pregnancy, risk behavior, teaching skills, communication skills, data collection skills and familiarization with the program. After training, students who performed the best teaching ability/conducting activity were selected to lead classes/activities in the program, while two students were selected for data collection in the intervention and comparison groups, respectively.

Materials

A self-administered questionnaire was designed specifically as a tool to assess the knowledge, attitude and intention regarding the use of condom and emergency contraceptive pills in the intervention group and the comparison group before and after program implementation. The questionnaire was composed of 52 questions divided into five parts, as follows: sociodemographic characteristics (7 questions including age, overall grade point average (GPAX: calculated the accumulated grade points until the end of the last semester into mean for summarization of the students’ whole performance), parents’ marital status, parents’ relationship, current residence type and average income per month); sexual risk behavior (15 questions, including having a boyfriend, experience of hugging and kissing and sexual experience); knowledge of condoms and emergency contraceptive pills (12 questions); attitudes toward the use of condoms and emergency contraceptive pills (12 questions); and intentions with regard to the use of condoms and emergency contraceptive pills (12 questions). The questions for knowledge of condom and emergency contraceptive pills were adapted mainly from the following two sources: Use of Emergency Contraceptive Pills and Condoms by College Students: A Survey[16] and Intention to Use Condoms among University Students in Nakhon Pathom Province, Thailand[17]. The questions for attitudes regarding condom and emergency contraceptive pills were adapted mainly from the following two sources: Asking Young People About Sexual and Reproductive Behaviors: Illustrative Questionnaire for Interview Surveys with Young People[7] and Use of Emergency Contraceptive Pills and Condoms by College Students: A Survey[16]. The questions for intentions regarding the use of condom and emergency contraceptive pills were adapted from the following two sources: Development and Validation of a Condom Self-efficacy Scale for College Students[18] and Development of a Condom Use Self-efficacy Scale for Undergraduate Students[19].

The questionnaire was validated by five experts in the area of public health and adolescent sexual behavior. The items-objective congruence index value was 0.78. To test the reliability of the questionnaire, a pilot study was conducted with a sample of 30 students who had similar characteristics to the respondents. The Cronbach’s α was 0.70, 0.72 and 0.71 for knowledge, attitudes and intentions regarding use of condoms and emergency
contraceptive pills, respectively. These results were considered acceptable. The 12 yes/no questions about knowledge of condoms and emergency contraceptive pills were scored, with a total score of 12 points. The 12 questions about attitudes toward condoms and emergency contraceptive pills were scored using a five-point Likert scale, with a total score of 48 points. The 12 questions about intentions on condoms and emergency contraceptive pills were scored using a five-point Likert scale, with a total of 48 points.

Ethical consideration
Ethical approval was obtained from the Burapha University Ethics Review Committee for Human Research Subjects (certified code: Hu 029-2560). Study objectives and data collection procedures were fully explained to the university students prior to their participation, and they signed informed consent forms to indicate their willingness to participate. Code names were used to protect participants’ privacy, and data were kept confidential.

Data analysis
Data analysis was carried out using SPSS version 22 (Chulalongkorn University licensed). Sociodemographic characteristics between the groups were analyzed in terms of frequencies and percentages. Sociodemographic differences between the two groups were tested using $\chi^2$ and Fisher exact tests. Normality was tested for knowledge attitude and intention. The Wilcoxon test was used for comparing the knowledge score due to its abnormal distribution. A paired samples $t$-test was used for comparing attitude and intention scores.

The scores (after intervention) in the knowledge, attitude and intention scores between the groups was not normal so those were analyzed by using the Mann–Whitney test. To compare knowledge, attitudes and intentions regarding using condoms and emergency contraceptive pills within each group, we used mean, standard deviation, mean difference (95% CI), median (interquartile range) and $p$-value of total scores in each subscale. The comparison between groups was carried out using number, median, IQR and $p$-value.

Results
During the study period, one student in the intervention group dropped out because she was expelled from the university, leaving 36 students in the intervention group and 37 students in the comparison group, with 73 students in the final analysis.

Table I shows the demographic characteristics comparison of the two groups. The participants in the intervention and comparison groups were not significantly different in terms of age, grade average point, parent marital status and average income distribution (all $p$-values $>0.05$). The percentage of participants in the intervention group who stayed outside university dormitories was 86.1 whilst the percentage who stayed with a boyfriend was 25.0. Both percentages were significantly higher than that of the comparison group. Most of both groups had experienced hugging and kissing. Nearly two-thirds of both groups had a history of sexual intercourse; however, most boyfriends used condoms during sexual intercourse and nearly half of them used emergency contraceptive pills.

Table II shows statistically significant differences in the scores for knowledge, attitudes and intentions before and after intervention in the intervention group ($p < 0.001$). On the other hand, there were no statistically significant differences in the scores for knowledge, attitudes and intentions before and after intervention in the comparison group ($p = 0.95$). The change of mean difference attitude score in the intervention group was 3 (95% CI = −4.70, −1.14), and the change of mean difference intention score in the intervention group was 3 (95% CI = −4.48, −1.63).
Table I. Demographic and sexual behavior-related characteristics of intervention group and comparison group

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Intervention group (n = 36)</th>
<th>Comparison group (n = 37)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>20 (55.6)</td>
<td>19 (51.4)</td>
<td>0.72a</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>16 (44.4)</td>
<td>18 (48.6)</td>
<td></td>
</tr>
<tr>
<td>Grade average point</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 25</td>
<td>10 (27.8)</td>
<td>9 (24.3)</td>
<td>0.74a</td>
</tr>
<tr>
<td>&gt; 25</td>
<td>26 (72.2)</td>
<td>28 (75.7)</td>
<td></td>
</tr>
<tr>
<td>Parent marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>10 (27.8)</td>
<td>9 (27.3)</td>
<td>0.74a</td>
</tr>
<tr>
<td>Married</td>
<td>26 (72.2)</td>
<td>28 (75.7)</td>
<td></td>
</tr>
<tr>
<td>Average income per month (baht)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 5,000</td>
<td>6 (16.7)</td>
<td>12 (32.4)</td>
<td>0.12a</td>
</tr>
<tr>
<td>&gt; 5,000</td>
<td>30 (83.3)</td>
<td>25 (67.6)</td>
<td></td>
</tr>
<tr>
<td>Current residence type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dormitory outside the university</td>
<td>31 (86.1)</td>
<td>25 (67.6)</td>
<td>0.06a</td>
</tr>
<tr>
<td>Dormitory in the university</td>
<td>5 (13.9)</td>
<td>12 (32.4)</td>
<td></td>
</tr>
<tr>
<td>Staying with boyfriend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (25.0)</td>
<td>5 (13.5)</td>
<td>0.21a</td>
</tr>
<tr>
<td>No</td>
<td>27 (75.0)</td>
<td>32 (86.5)</td>
<td></td>
</tr>
<tr>
<td>Hugging and kissing experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34 (94.4)</td>
<td>31 (83.8)</td>
<td>0.26b</td>
</tr>
<tr>
<td>No</td>
<td>2 (5.6)</td>
<td>6 (16.2)</td>
<td></td>
</tr>
<tr>
<td>Previous sexual intercourse (vaginal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26 (72.2)</td>
<td>24 (64.9)</td>
<td>0.50a</td>
</tr>
<tr>
<td>No</td>
<td>10 (27.8)</td>
<td>13 (35.1)</td>
<td></td>
</tr>
<tr>
<td>Experience of drinking alcohol in the last 6 months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (56.0)</td>
<td>14 (58.3)</td>
<td>0.87a</td>
</tr>
<tr>
<td>No</td>
<td>11 (44.0)</td>
<td>10 (41.7)</td>
<td></td>
</tr>
<tr>
<td>Experience of an emergency contraceptive pill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15 (57.7)</td>
<td>11 (45.8)</td>
<td>0.40a</td>
</tr>
<tr>
<td>No</td>
<td>11 (42.3)</td>
<td>13 (54.2)</td>
<td></td>
</tr>
<tr>
<td>Using condom^d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24 (92.3)</td>
<td>23 (69.8)</td>
<td>1.00b</td>
</tr>
<tr>
<td>No</td>
<td>2 (7.7)</td>
<td>1 (4.2)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: aχ² test; bFisher exact test

Table II. Comparison of knowledge, attitude and intention scores in the intervention group and the comparison group before and after intervention

<table>
<thead>
<tr>
<th>Groups</th>
<th>Knowledge^a</th>
<th>Attitude^b</th>
<th>Intention^b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Intervention group (n = 36)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X(SD)</td>
<td>8.0 (3.0)c</td>
<td>11.0 (2.0)c</td>
<td>29.4 (4.4)</td>
</tr>
<tr>
<td>Mean difference (95% CI)</td>
<td>–</td>
<td>3.0 (−4.70, −1.14)</td>
<td>3.0 (−4.48, −1.63)</td>
</tr>
<tr>
<td>p-value</td>
<td>&lt; 0.001</td>
<td>&lt; 0.001</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Comparison group (n = 37)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X(SD)</td>
<td>7.0 (3.0)c</td>
<td>7.0 (3.0)c</td>
<td>31.3 (3.9)</td>
</tr>
<tr>
<td>Mean difference (95% CI)</td>
<td>–</td>
<td>0.0 (−1.78, 1.67)</td>
<td>−10 (−2.23, 2.28)</td>
</tr>
<tr>
<td>p-value</td>
<td>0.95</td>
<td>0.95</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Notes: ^ Wilcoxon test; paired samples t-test; median (IQR)
According to the scores for knowledge, attitudes and intentions after intervention, there were statistically significant differences in knowledge ($p < 0.001$) and intention ($p = 0.04$) between the intervention group and the comparison group, respectively. There was no statistically significant differences in attitude between these groups ($p = 0.18$) (Table III).

Discussion
This educational program showed significant effects on knowledge and intention in the intervention group. Moreover, the educational program had significant in-group effects on knowledge, attitudes and intention, similar to another study on an educational program with nursing students[20]. The research assistants in this educational program were selected from fourth-year students of the same age and trained in pregnancy-prevention content and techniques to communicate about safe sex. This was similar to another study on “Smart boys” and “sweet girls” sex education needs in Thai teenagers: a mixed-method study[21]. Knowledge, therefore, was easily transferred to university students, and the participants’ attitudes, intentions and behaviors about using condom and emergency contraceptive pills improved. The RAs liked peer-led sex education on adolescent and reproductive health, as reported in many other studies[22-24]. However, one study found that peer-led education was an ineffective strategy to change adolescent behaviors[25].

The self-efficacy theory was the main principle in the design of this educational program to increase knowledge, attitudes, and intentions to use condom and emergency contraceptive pills. Implementing the four principles of verbal persuasion; vicarious experiences; mastery experiences; and emotional arousal[26] in the educational program increased knowledge and intention but did not change attitudes in the intervention group. The participants gained knowledge from many teaching methods, especially the live-modeling technique based on vicarious experiences. Observational learning from live modeling promoted appropriate behaviors and discouraged inappropriate behaviors[27]. Overall, the educational program applying the emotional-arousal principle in conjunction with the edutainment technique was found to be attractive, funny, and not boring to adolescents. The educational program climate prepared the participants for learning. It can cautiously be concluded that adolescents have sensitive emotions, so appropriate techniques need to be selected to avoid unplanned, negative events, wherever possible[28-30].

An attitude is a set of emotions, beliefs and behaviors toward past and present experiences that influences behaviors[31]. No differences in attitude change in the intervention and the comparison groups were observed. A possible explanation for this result is that more than half the participants had negative attitudes toward condom and emergency contraceptive pills use. The study results show that more than half the participants believed that condoms are only for use with temporary partners and that using emergency contraceptive pills cause many complications. Boyfriend/lover influence and social norms may negatively affect attitudes toward the use of condom and emergency contraceptive pills.

### Table III
Comparison of knowledge, attitude, and intention scores between the intervention group and the comparison group after intervention by Mann–Whitney test

<table>
<thead>
<tr>
<th>Scores</th>
<th>$n$</th>
<th>Median</th>
<th>(IQR)</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td>$&lt; 0.001$</td>
</tr>
<tr>
<td>Intervention group</td>
<td>36</td>
<td>11.00</td>
<td>(2.0)</td>
<td></td>
</tr>
<tr>
<td>Comparison group</td>
<td>37</td>
<td>7.00</td>
<td>(3.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.18</td>
</tr>
<tr>
<td>Intervention group</td>
<td>36</td>
<td>33.0</td>
<td>(5.0)</td>
<td></td>
</tr>
<tr>
<td>Comparison group</td>
<td>37</td>
<td>31.0</td>
<td>(6.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Intention</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>Intervention group</td>
<td>36</td>
<td>21.0</td>
<td>(6.0)</td>
<td></td>
</tr>
<tr>
<td>Comparison group</td>
<td>37</td>
<td>19.0</td>
<td>(7.0)</td>
<td></td>
</tr>
</tbody>
</table>
contraceptive pills\cite{32,33}. The length of the program was limited to eight weeks because it was integrated into the normal university academic timetable which resulted in some restrictions. Moreover, due to the end of the semester, it was impossible to lengthen the program. A booster during the semester end is recommended using social media and online communication in order to increase attitudes toward condom and emergency contraceptive pills use\cite{34}.

The educational program design based on self-efficacy theory increased intention. The activities aimed at increasing adolescent intention were group discussion, role play and brainstorming about condom and emergency contraceptive use, including the pros and cons and verification of information. Mastery experiences were the main principle to generate intention among adolescents because direct experience is highly effective in developing self-efficacy\cite{27,35}. Knowledge is essential to assist an individual’s successful practice and behaviors\cite{26}. Knowledge and comprehension that affects attitudes can result in modification in behavior\cite{31}. Moreover, intention also influences behaviors\cite{36}. This study found that the program increased knowledge and intention.

Conclusion

This peer-led educational program on condom and emergency pill use had a positive effect on improving the knowledge and intentions of Thai female university students.

Recommendations

This study did not show significant change in attitude; therefore, new approaches should be created and further tested to improve positive attitudes regarding the use of using contraception methods to prevent unwanted pregnancies among university students. The educational program increases knowledge and intention toward condom and emergency contraceptive use. Extending the program to male university students will directly increase condom use to prevent unintended pregnancies. Generalizing the study results requires consideration of the context, which was industry and tourism.

References


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Factors related to methamphetamine relapse risk among clients in the substance rehabilitation center of National Narcotics Board in West Java, Indonesia

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Abstract

Purpose – This purpose of this paper is to describe methamphetamine relapse risk, examine the relationship between factors in the dynamic model of relapse and methamphetamine relapse risk.

Design/methodology/approach – A total of 165 clients from the Substance Rehabilitation Center of National Narcotics Board in West Java, Indonesia were recruited. The research instruments included a demographic characteristic questionnaire and eight different tests: Drug Taking Confidence Questionnaire; Stimulant Effect Expectancy Questionnaire; Stage of Change Readiness and Treatment Eagerness Scale version 8.0 for Drug; Coping Strategies Inventory Short Form; Positive Affect and Negative Affect Schedule; Desire for Speed Questionnaire; Social Support Questionnaire; and the Stimulant Relapse Risk Scale. Descriptive statistics were used to analyze the data. Pearson’s product moment correlation was used to test the relationship among variables.

Findings – Clients (63 percent) were at a moderate level of methamphetamine relapse risk (mean = 56.33, SD = 10.54). Outcome expectancy, positive emotional state, negative emotional state and craving were positive and had a significant correlation with relapse risk (r = 0.261, r = 0.380, r = 0.370, r = 0.509, p < 0.01, respectively). Self-efficacy was negative and had a significant correlation with relapse risk (r = −0.316, p < 0.01). Motivation, coping and social support had no correlation with relapse risk.

Originality/value – Two-thirds of the clients in a rehabilitation center have a tendency to relapse following treatment. Nursing intervention for early detection of methamphetamine relapse risk during treatment by using standardized instruments should be implemented.

Keywords Rehabilitation, Methamphetamine, Relapse risk, Dynamic model of relapse

Paper type Research paper

Introduction

The National Narcotics Board (NNB) in Indonesia Situation Assessment on ATS figured the numbers of drug users in 2011 was around 4.7m people; and 1.3m of those users abused crystalline methamphetamine[1]. The number of drug users in Indonesia has shown insignificant reduction within from 2007 to 2011[2]. Methamphetamine belongs to a group of synthetic stimulants that are potently addictive and cause withdrawal symptoms during cessation[3]. There are three phases of substance abuse treatment under the Indonesian

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This study was approved by the Institutional Review Board from the Ethical Committee of Health Research Medical Faculty of Padjadjaran University (Approval Letter No. 880/UN6.C.10/PN/2017). This study is supported by Graduate School Thesis Grant, Chulalongkorn University.
NNB, including detoxification phase, primary or rehabilitation phase and aftercare phase[4]. There are seven separated wards of the rehabilitation phase. These are: the entry unit to prepare clients before entering the rehabilitation phase, house of faith and house of hope for long-term rehabilitation (six months), house of care and house of change for short term rehabilitation (four month), house of females and re-entry unit to prepare clients prior to the aftercare phase. Currently, there is no study on drug relapse, specifically on methamphetamine users in Indonesia; however, there are some studies in Asia that support the high rate of relapse in the methamphetamine user population. Notably, the relapse rate of methamphetamine users in Cambodia, Laos and Thailand was extremely high, amounting to almost 100 percent of post-treatment cases[5].

Methamphetamine relapse is a resumption of methamphetamine after at least six months of voluntary abstinence and/or resumption of methamphetamine after discharge from a mandated treatment program[6]. It can be concluded that relapse commonly occurs post-treatment. Currently, researchers have been interested in preventing this problem. As such, a concept of “relapse risk” has been invented in the last decade. Ogai et al. defined relapse risk as a clinical sign and symptoms which precede relapse during post-treatment[7].

The term relapse risk is also mentioned in the Relapse Prevention Model (RPM) of Marlatt and Gordon in 1985[8]. It contains several factors that contribute to relapse including self-efficacy, outcome expectancy, motivation, coping, emotional state, craving and social support. It was then developed to a Dynamic Model of Relapse by Witkiewitz and Marlatt in 2004, and that contains similar factors to the RPM, with the addition of physical withdrawal [9, 10]. The difference is the Dynamic Model of Relapse views relapse as a nonlinear process in which various factors act jointly to affect relapse timing and severity[10]. The population of this study was taken from clients in a rehabilitation treatment setting, having already passed the detoxification phase and also not showing any physical withdrawal. Therefore, physical withdrawal was excluded from the selected independent variable of the study.

Evidence from past studies highlighted the relationship between the factors of RPM components with relapse and relapse risk for stimulant drug users. Higher levels of self-efficacy are associated with prolonged abstinence and a lower risk of relapse[11, 12]. The effect of drugs and the expected outcomes correlated with the use of the drug creates desire; in which, it can increase the prevalence of relapse risk[8, 13]. Being motivated to abstain influences self-efficacy and outcomes which decreases relapse risk[14, 15]. The coping strategies that a client employs with stressful life events is associated with the risk of relapse and the periods of abstinence[16, 17]. Negative emotional state increases the risk of relapse while positive emotional state decreases it[16, 18]. Craving precedes methamphetamine relapse in the first week immediately following abstinence from the treatment[19, 20]. At last, presence of a support system of people and the quality of social support are related to the relapse risk and number of abstinence days after treatment[21–23].

Methods
This descriptive correlation study was conducted at six wards of rehabilitation phase treatment in the Substance Rehabilitation Center of NNB in West Java among adults who were diagnosed with methamphetamine use disorder. A dependent variable of this study is methamphetamine relapse risk; and the independent variables of this study are self-efficacy, outcome expectancies, motivation, coping including engagement and disengagement coping, emotional state including positive and negative emotional state, craving and social support. In total, this study has ten variables. Based on Thorndike’s method, 150 subjects were required as a sample. In order to overcome the missing data, 165 subjects were recruited. A purposive sampling technique was used to recruit the subjects. The inclusion criteria were: male and female adults aged 20–65 years old who met the criteria for
methamphetamine use disorder based on stimulant-related disorder criteria in DSM-5, no cognitive impairment as shown by Mini–Mental State Examination score, no limitation of communication, and willing to participate in the study. Finally, 17 subjects were recruited from the entry unit; 31 subjects were recruited from the re-entry unit; 30 subjects were recruited from the house of faith; 37 subjects were recruited from the house of hope; 32 subjects were recruited from the house of care; and 18 subjects were recruited from the house of females.

Measurements tools
The demographic characteristics questionnaire consisted of both closed-ended questions and open-ended questions asking about age, gender, level of education, occupation, register process, relapse experience, legal problem status and duration of drug use.

The Drug Taking Confidence Questionnaire is a 50-item questionnaire that assists the clients to measure their self-efficacy by reporting how confident they are in resisting the urge of using drugs in a given situation[24]. The test employs a Likert scale response ranging in 20-point increments. The score was calculated by totaling a respondent’s points for each item question. The higher the score indicates the better the self-efficacy. The content validity index was 0.84 and Cronbach’s $\alpha$ was 0.98.

The Stimulant Effect Expectancy Questionnaire (SEEQ) was employed to assess client’s perceptions of methamphetamine’s effects[25] with adaptation to use in stimulants, such as cocaine including crack and amphetamine[13]. The 46 items of SEEQ comprise the 5 following scales: global positive effects, global negative effects, general arousal, anxiety and relaxation and tension reduction. Each Likert-scale-item scored from 1 to 5 (from disagrees strongly to agree strongly). The higher the mean scores of global positive effect expectancy, general arousal, and relaxation and tension reduction, the higher the client believed in the positive effects of using methamphetamine. The content validity index was 0.84 and Cronbach’s $\alpha$ was 0.92.

The Stage of Change Readiness and Treatment Eagerness Scale is a 19-item questionnaire to assess motivation level of clients that comprise three scales, including recognition, ambivalence, and taking steps[26]. Each item was scored by using a five-point-Likert-scale ranging from strongly disagree to strongly agree. The score was calculated by totaling raw scores from a client’s response for each item. The content validity index was 0.93 and Cronbach’s $\alpha$ was 0.87.

The CSI-S is a 32-item checklist to assess how a client handles stressful life circumstances, namely, emotional, behavioral and cognitive abilities that consist of three subscales including eight primary subscales (problem solving, cognitive restructuring, emotional expression, social support, problem avoidance, wishful thinking, self-criticism and social withdrawal), four secondary subscales (problem focused engagement, emotion focused engagement, problem focused disengagement and emotion focused disengagement), and two tertiary subscales (engagement and disengagement)[27]. This study employed a tertiary subscale. The score was calculated by totaling a client’s response in a tertiary subscale. High scores on the subscale indicate coping strategies that the client employs. The content validity index was 0.84 and Cronbach’s $\alpha$ was 0.91.

The Positive Affect and Negative Affect Schedule was employed to measure the client’s emotional state[28]. It consists of ten items to assess positive affect and another ten items to assess negative affect (NA). A five-point-Likert scale was used, ranging from very slightly or not at all to extremely. The score was calculated by totaling the client’s responses for and NA. Higher scores indicate the more positive or NA. The content validity index was 0.90 and Cronbach’s $\alpha$ was 0.90.

The Desire for Speed Questionnaire was designed to measure craving of stimulant drug that consist of 24 items comprising four subscales: expectancy of positive and negative
reinforcement, strong desires and intentions to use, mild desires and intentions to use and control[29]. A seven-point-Likert scale was used to measure how strongly they agreed with each statement. The score was calculated by totaling each client’s response for every question. The higher the score indicates the stronger the client’s craving. The content validity index was 0.88 and Cronbach’s α was 0.95.

The Social Support Questionnaire (SSQ6) is a measurement of global perceptions of perceived available support[30]. The client can mention no more than nine individuals for each list situation. The second part is a client’s satisfaction perception score of support that they received in the given situation. Total number of support and satisfaction was obtained by calculating the mean across the number of support and satisfaction ratings. A maximum total for the mean number of support is 9 and 6 for the total satisfaction. The higher the mean score of support number and the total satisfaction indicates the better social support that the client had. The content validity index was 0.93 and Cronbach’s α was 0.89.

Relapse risk as a dependent variable in this study was measured using Stimulant Relapse Risk Scale (SRRS) comprising five subscales: anxiety and intention (AI) to use drug, emotional problem, compulsivity for drug, positive expectancies and lack control over drug and lack of negative expectancy for the drug[7]. The responses were gauged using a three-point-Likert scale. The higher total mean score, the higher risk of relapse during the three to six months following treatment. The content validity index was 0.83 and Cronbach’s α was 0.86.

Data analysis
Descriptive statistics were used to describe demographic characteristics and risk of relapse of the rehabilitation clients. The level of significance of the study was set at α = 0.05. Further, Pearson’s product moment correlation was used to examine the relationship between self-efficacy, outcome expectancy, motivation, coping, emotional state, craving, social support and relapse risk among clients.

Results
A total of 165 subjects who met the inclusion criteria were recruited in this study. Two-thirds of the participants were aged between 20 and 29 years. The majority of the participants were male (89 percent). The level of education was mostly senior high school (63.6 percent). More than a half of participants (59.4 percent) were unemployed. In total, 12.7 percent of participants were involved in illegal issues. One-third of the participants had a relative who used methamphetamine. More than half of the participants have been using methamphetamine for one to five years (mean = 6.95, SD = 5.24). A total of 89 participants came to the rehabilitation center because for them it was compulsory (53.9 percent), and the entire participants experienced relapse. In this study it was found that 63 percent of the clients were at a moderate level of methamphetamine relapse risk with a mean score of relapse risk at 56.25 (SD = 10.54). Among the five factors of relapse risk, AI to use drugs were the highest cause for relapse risk among participants (mean = 15.76, SD = 3.36), followed by emotional problems (EP) (mean = 15.62, SD = 3.71), positive expectancies and lack of control over drug use (PL) (mean = 11.29, SD = 3.57), lack of negative expectancies for drug (NE) (mean = 7.40, SD = 2.03), and at last, compulsivity for drug use (mean = 6.25, SD = 2.21) Table I.

Correlation between selected factors and methamphetamine relapse risk
There were positive correlations between outcome expectancy, positive emotional state, negative emotional state, craving and relapse risk ($r = 0.261$, $r = 0.380$, $r = 0.370$, $r = 0.509$, $r = 0.282$).
Self-efficacy had a negative correlation with relapse risk ($r = -0.316$, $p < 0.01$). At last, motivation, social support and coping had no correlation with relapse risk as shown in Table II.

**Discussion**

The assessment of relapse risk during treatment is believed to be able to predict relapse following treatment; and that is important for the prevention of relapse[19]. Predictive validity of the SRRS showed that relapse within three months was significantly and positively correlated with AI, PL and NE. Similarly, relapse within six months was significantly and positively correlated with PL and NE. The result of this study showed that AI, EP and PL were the highest cause for relapse among clients. Highest mean score of AI and PL indicates that clients have a tendency to relapse within three months after

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>61.33</td>
<td>22.96</td>
</tr>
<tr>
<td>Outcome expectancies</td>
<td>154.98</td>
<td>28.09</td>
</tr>
<tr>
<td>Global positive effects</td>
<td>37.32</td>
<td>8.00</td>
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<tr>
<td>Global negative effects</td>
<td>46.55</td>
<td>10.82</td>
</tr>
<tr>
<td>General arousal</td>
<td>30.36</td>
<td>6.12</td>
</tr>
<tr>
<td>Anxiety</td>
<td>28.47</td>
<td>5.49</td>
</tr>
<tr>
<td>Relaxation and tension reduction</td>
<td>12.36</td>
<td>3.06</td>
</tr>
</tbody>
</table>

**Discussion**

The assessment of relapse risk during treatment is believed to be able to predict relapse following treatment; and that is important for the prevention of relapse[19]. Predictive validity of the SRRS showed that relapse within three months was significantly and positively correlated with AI, PL and NE. Similarly, relapse within six months was significantly and positively correlated with PL and NE. The result of this study showed that AI, EP and PL were the highest cause for relapse among clients. Highest mean score of AI and PL indicates that clients have a tendency to relapse within three months after

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation coefficients</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>-0.316**</td>
<td>0.000</td>
</tr>
<tr>
<td>Outcome expectancy</td>
<td>0.263**</td>
<td>0.001</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.073</td>
<td>0.352</td>
</tr>
<tr>
<td>Coping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engagement coping</td>
<td>-0.014</td>
<td>0.854</td>
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<tr>
<td>Disengagement coping</td>
<td>0.099</td>
<td>0.208</td>
</tr>
<tr>
<td>Emotional state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive emotional state</td>
<td>0.380**</td>
<td>0.000</td>
</tr>
<tr>
<td>Negative emotional state</td>
<td>0.370**</td>
<td>0.000</td>
</tr>
<tr>
<td>Craving</td>
<td>0.509**</td>
<td>0.000</td>
</tr>
<tr>
<td>Social support</td>
<td>0.030</td>
<td>0.796</td>
</tr>
</tbody>
</table>

**Table I.** Mean and standard deviation (SD) of independent variables

**Table II.** Correlation between selected factors and methamphetamine relapse risk

$p < 0.01$, respectively. $p < 0.01$).
rehabilitation treatment. Even though EP was not significantly correlated with relapse risk, EP showed a significant correlation with the depression scale and other factors of SRSS which indicates that the EP factor has an indirect effect in increasing the subjective desire for drug and thus the relapse risk.

Self-efficacy was negatively correlative with relapse risk ($r = -0.316$, $p < 0.01$) indicating that the increasing self-efficacy of clients to resist drug use during treatment can decrease relapse risk following treatment. Even though this study showed a moderate correlation between self-efficacy and relapse risk, a prior study found that self-efficacy has the most influence with regard to the risk of relapse[11, 12, 31, 32]. Outcome expectancy was positively correlative with relapse risk ($r = 0.261$, $p < 0.01$) indicating that as the outcome expectancy increased during treatment, relapse risk will increase. The outcome expectancy in this study is defined as an effect that a client expects will occur as a result of drug consumption[14]. Negative emotional state was positively correlative with relapse risk ($r = 0.370$, $p < 0.01$) indicating that as the negative emotional state increases during treatment, relapse risk will increase. It was generally accepted that negative emotional state contributes to a high risk of drug use relapse and the outcome of treatment[16, 33, 34]. Positive emotional state was also positively correlative with relapse risk ($r = 0.380$, $p < 0.01$) indicating that as the positive emotional state increases, relapse risk will increase. Although several studies focused on negative mood as a factor prior to relapse, some studies support that a positive emotional state can also lead to relapse following treatment in certain ways[18, 35]. Craving was positively correlative with relapse risk ($r = 0.509$, $p < 0.01$) indicating that as the craving level increases, relapse risk will increase. This finding supported the hypotheses and previous related studies that conclude craving as an intense desire or irresistible urge leads to drug seeking or drug taking that can contribute to relapse[19, 20, 36].

In this study, motivation had no correlation to relapse risk because more than half of the participants were compelled to come to the rehabilitation center which indicated that the majority of them were less motivated to take the treatment[37]. Although there was no relationship between overall coping and relapse risk, two subscales of coping including the express emotion and social withdrawal were significantly correlated to relapse risk, indicating a partial support of the study hypothesis. Interestingly, finding from this study is contradictory to those found in the previous studies that social support had correlation with relapse risk[21–23]. The current study used the SSQ6 which is a measurement of global perceptions of perceived available support individual received in the given situation[30], which may be differ from instruments used in other studies. The SSQ6 may not be applicable to measuring received social support from various sources[38] (i.e. friend, neighbor, community leader) among patients who are treating in the closed setting as Substance Rehabilitation Center. Most subjects in this study indicated that the only current supported they had received and satisfied with came from the visit of their family members, which therefore limited an effect of social support on perceived relapse risk.

The implications involving the practice of nursing are that the early detection of methamphetamine relapse risk during treatment by using standardized instruments should be utilized as a part of nursing intervention. Relapse Prevention Therapy should be implemented in the rehabilitation phase for an extended period of time as a continuum program in order to lower relapse risk[39].

Conclusion
The results showed that in general, clients in the rehabilitation center of NNB in West Java, Indonesia, were at a moderate level of methamphetamine relapse risk. Outcome expectancy, negative emotional state, positive emotional state and craving had positive significant
correlation with methamphetamine relapse risk. In addition, self-efficacy had a negative significant correlation with relapse risk. At last, motivation, social support and coping had no correlation with methamphetamine relapse risk.

Limitation of the study and recommendations

This study employed a set of questionnaires that produce database on client’s perception during the rehabilitation phase of treatment. Further, a qualitative research to explore relapse risk during treatment is suggested in order to obtain additional precise data about methamphetamine relapse risk which is relevant to the current situation.

References


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Prevalence and predictors of tobacco use among Bhutanese adolescents

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Namgay Dawa
District Health Sector, Wangdue Phodrang, Bhutan

Abstract

Purpose – The purpose of this paper is to examine the prevalence of tobacco use and associated factors influencing the use of tobacco among adolescents in a school setting.

Design/methodology/approach – A cross-sectional descriptive study was conducted amongst Bhutanese adolescents studying at high schools in the district of Wangdue Phodrang in May 2016. A total of 378 eighth-grade students from four schools participated in the study. A self-administered questionnaire was used to collect data. Bivariate and multivariate logistic regressions were carried out to describe the predictors of tobacco use.

Findings – Of the 378 student participants, 52.90 percent were girls and 47.10 percent boys. The age ranged from 11 to 19 years, and the majority lived in school hostels (82 percent). The prevalence of smoking was 10.80 percent while smokeless tobacco users constituted 11.10 percent in the month preceding the study. Gender, tobacco use by siblings and friends, ever having tried alcohol, consumption of alcohol in the last 30 days, previous experimentation with cigarettes/bidi and smokeless tobacco/baba (p-value < 0.05) were significantly related to the use of tobacco among students. In multivariate analysis, tobacco use by friends (AdjOR = 1.09; 95%CI = 0.01–2.48), ever having tried alcohol (AdjOR = 2.24; 95%CI = 1.75–3.72), current alcohol use (AdjOR = 2.63; 95%CI = 1.52–4.31), experimentation with cigarettes/bidi (AdjOR = 39.46; 95% CI = 11.91–90.63) or with smokeless tobacco/baba (AdjOR = 32.61; 95%CI = 11.78–90.30) were observed as the strong predictors of current tobacco use among adolescents.

Originality/value – These study results re-emphasized the rising public health concern of tobacco use among younger boys and girls. The findings may help the Bhutanese policy makers and managers to better understand the present situation of adolescent tobacco use and its associated determinants, and formulate appropriate tobacco control strategies for adolescents.

Keywords Adolescent health, Bhutan, Tobacco use

Paper type Research paper

Introduction

Tobacco use is a major public health problem and kills about six million users each year[1]. Around 600,000 non-users die due to secondhand tobacco smoke of which 170,000 are children[2]. Tobacco use among adolescents is comparatively lower than that of adults[3]. Tobacco use starts at a young age, and the majority of adult smokers started using tobacco in their adolescence. When adolescent experimentation with tobacco becomes regular, it usually turns into a strong addiction, making it harder to quit later in life[4]. The earlier an adolescent first tries using tobacco products, the higher his or her chances of eventually becoming a regular tobacco user[4]. If the present global pattern of tobacco use continues,
this may result in the death of 250 million children and young people, particularly in
developing countries[5].

Tobacco use among 13–15 year olds is a major concern in several South-East Asian
countries. The prevalence of tobacco use in this age group was highest in Timor-Leste (42 percent), followed by Bhutan (30 percent). The use of tobacco among boys was higher than for girls. Bhutan, Myanmar and Nepal have the highest rates of smokeless tobacco (SLT) use among adolescents. In all countries, SLT use among boys was higher than among girls[6–8]. The Global School-based Student Health Survey (2016) reported that 29.4 percent of students aged 13–17 years old were current users of tobacco[7]. Similarly, the Global Youth Tobacco Survey (2013) of Bhutan stated that 28.6 of boys and 11.1 percent of girls currently smoked tobacco. Furthermore, 27.2 percent of boys and 19.8 percent of girls are
current users of smokeless tobacco, one of the highest in the South-East Asia[8]. Despite the
stringent tobacco control acts and regulations in place Bhutan, the rise in tobacco use
amongst adolescents may roughly be attributed to the widespread illegal trade in tobacco.

A recent survey in Bhutan showed that the trend of tobacco use among Bhutanese youth
has increased substantially[8]. Even though Bhutan banned the sale of tobacco products
since 2004, it has not prevented adolescents from accessing and using tobacco products. It
also hints at the lack of or limited health education programs on the dangers of tobacco use.

Tobacco use among adolescents had been associated with socio-demographic factors,
including age, gender, residence, tobacco use by parents, siblings and peers[9–15]. Studies
have found associations between smoking and an adolescent’s personality and self-esteem.
Adolescents with an extrovert personality type[16–18] or having poor self-esteem[19, 20]
had been found to be associated with their using tobacco products. Additionally, studies
have reported that adolescents who consumed alcohol[21–25] and earlier experimented with
cigarettes had been linked to initiation or use of tobacco[26]. In Bhutan, there are only a few
number of studies on tobacco use among adolescents. However, information on the factors
influencing adolescent’s tobacco use is currently lacking. This study aimed to examine the
prevalence of tobacco use and associated factors influencing the use of tobacco among
adolescents in a school setting.

Methods

Study design and participants
This was a cross-sectional descriptive study. The data on tobacco use among Bhutanese
adolescents and their characteristics were obtained in May 2016. The eighth-grade students
studying at secondary schools in the district of Wangdue Phodrang comprised the study
population. This district was selected because it was a high risk area for illegal sale of
tobacco products. Four secondary schools were deemed eligible for this study as they
included eighth-grade pupils. The sample size was estimated[27] using a confidence interval
of 95%, a precision of 5 percent and the past reported proportion of adolescents (29 percent)
using tobacco[7]. The minimum sample required was 318. However, all eighth-grade
students (378) in the eligible schools were recruited for the study since the school authorities
wanted all of them to participate.

Research instruments
The research instrument was a self-administered questionnaire of close-ended questions on
the following variables: age, sex, residence, occupation of parents, tobacco use among family
members and friends; and alcohol use and personality type. Students who used tobacco in the
past 30 days were considered current users. A pre-test was conducted with 30 students.
The internal consistency of the instrument was estimated using Cronbach’s α coefficient. The
acceptable coefficient value of 0.79 was obtained.
**Data collection**

The researcher selected four health workers from the community health centers near the study sites, and provided them with training on data collection procedures. The students were given a self-administered questionnaire, to maintain confidentiality and encourage honest reporting. The health workers collected completed questionnaires and submitted them to the researcher for data entry and further analysis. The Research Ethics Board of Health, Ministry of Health, Royal Government of Bhutan reviewed and approved the study proposal (REBH/Approval/2016/028).

**Data analysis**

SPSS version 22 was used for data analysis. Descriptive statistics were used to describe the participant’s demographic characteristics and their tobacco use behavior. The bivariate analysis was done to find out the association between each independent variable and tobacco use. Multivariate logistic regression was performed to analyze the predictors of tobacco use where a $p$-value of $< 0.05$ was considered statistically significant.

**Results**

**Demographic information**

As given in Table I, there were 378 students who took part in the study. Of them, 200 were girls (52.90 percent) and 178 boys (47.10 percent). Their ages ranged from 11 to 19 years with the majority of them between 14 and 16 years (74.87 percent). Most of them lived in school hostels (82 percent). The occupations of their parents were mostly farmers. Regarding the use of tobacco by the student’s parents, 4 percent of their fathers and 2.1 percent of mothers were current tobacco users. Tobacco use among their friends (7.90 percent) was higher than their siblings (2.70 percent) and parents. There were 119 students (31.50 percent) who experimented with alcohol in the past, but only 30 students (7.90 percent) were currently drinking alcohol. Over half of the students (55.50 percent) described themselves as introverts and the rest as extroverts (44.40 percent). While most students regarded themselves as having a moderate self-esteem (69.30 percent), only 19.80 percent of them had a high self-esteem and 10.80 percent a low self-esteem.

**Tobacco use among adolescents**

Of the 378 students, 58 either smoked cigarettes/bidis or used smokeless tobacco/baba or both in the past 30 days, as shown in Table II. The proportion of adolescents who experimented with smokeless tobacco products (16.10 percent) was higher than those experimented with cigarettes (13.20 percent). Of the 58 current tobacco users, 41 smoked while 42 used smokeless tobacco. There were 25 users who took both smoking and smokeless forms of tobacco products.

**Associations between the independent variables and tobacco use among adolescents**

In Table III, a total of seven factors or characteristics were found to have associations with current tobacco use. Gender (OR = 3.22; 95%CI = 1.76–5.91), tobacco use by siblings (OR = 3.88; 95%CI = 1.06–14.19), tobacco use by friends (OR = 3.71; 95%CI = 1.66–8.28), ever having tried alcohol (OR = 8.28; 95%CI = 4.41–15.56), consumption of alcohol in the last 30 days (OR = 8.32; 95%CI = 3.79–18.28), experimentation with cigarettes/bidi (OR = 48.77; 95%CI = 22.10–107.57) and experimentation with smokeless tobacco/baba (OR = 48.69; 95%CI = 22.58–102.43) were related to the use of tobacco among Bhutanese adolescents. However, age, residence, personality type, self-esteem and parental use of tobacco were not associated with the use of tobacco products.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n = 378</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>178</td>
<td>47.10</td>
</tr>
<tr>
<td>Girls</td>
<td>200</td>
<td>52.90</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11–13</td>
<td>53</td>
<td>14.02</td>
</tr>
<tr>
<td>14–16</td>
<td>283</td>
<td>74.87</td>
</tr>
<tr>
<td>17–19</td>
<td>42</td>
<td>11.11</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>59</td>
<td>15.60</td>
</tr>
<tr>
<td>Hostel</td>
<td>310</td>
<td>82.00</td>
</tr>
<tr>
<td>Other’s house</td>
<td>9</td>
<td>2.40</td>
</tr>
<tr>
<td><strong>Father’s occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture/farmer</td>
<td>239</td>
<td>63.20</td>
</tr>
<tr>
<td>Government servant</td>
<td>66</td>
<td>17.50</td>
</tr>
<tr>
<td>Business/private sector</td>
<td>36</td>
<td>9.50</td>
</tr>
<tr>
<td>Others</td>
<td>37</td>
<td>9.80</td>
</tr>
<tr>
<td><strong>Mother’s occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>145</td>
<td>38.40</td>
</tr>
<tr>
<td>Agriculture/farmer</td>
<td>173</td>
<td>45.80</td>
</tr>
<tr>
<td>Government service</td>
<td>17</td>
<td>4.50</td>
</tr>
<tr>
<td>Business/private sector</td>
<td>32</td>
<td>8.50</td>
</tr>
<tr>
<td>Others</td>
<td>11</td>
<td>2.90</td>
</tr>
<tr>
<td><strong>Tobacco use by father</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>244</td>
<td>64.50</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>119</td>
<td>31.50</td>
</tr>
<tr>
<td>Yes, in the last 30 days</td>
<td>15</td>
<td>4.00</td>
</tr>
<tr>
<td><strong>Tobacco use by mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>269</td>
<td>71.20</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>101</td>
<td>26.70</td>
</tr>
<tr>
<td>Yes, in the last 30 days</td>
<td>8</td>
<td>2.10</td>
</tr>
<tr>
<td><strong>Tobacco use by siblings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>295</td>
<td>78.00</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>73</td>
<td>19.30</td>
</tr>
<tr>
<td>Yes, in the last 30 days</td>
<td>10</td>
<td>2.70</td>
</tr>
<tr>
<td><strong>Tobacco use by friends</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>253</td>
<td>66.00</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>35</td>
<td>25.10</td>
</tr>
<tr>
<td>Yes, in the last 30 days</td>
<td>30</td>
<td>7.90</td>
</tr>
<tr>
<td><strong>Ever tried taking alcohol</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>119</td>
<td>31.50</td>
</tr>
<tr>
<td>No</td>
<td>259</td>
<td>68.50</td>
</tr>
<tr>
<td><strong>Used alcohol in the past 30 days</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>7.90</td>
</tr>
<tr>
<td>No</td>
<td>348</td>
<td>92.10</td>
</tr>
<tr>
<td><strong>Your personality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrovert</td>
<td>168</td>
<td>44.40</td>
</tr>
<tr>
<td>Introvert</td>
<td>210</td>
<td>55.60</td>
</tr>
<tr>
<td><strong>Your self-esteem</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>41</td>
<td>10.80</td>
</tr>
<tr>
<td>Moderate</td>
<td>262</td>
<td>69.30</td>
</tr>
<tr>
<td>High</td>
<td>75</td>
<td>19.80</td>
</tr>
</tbody>
</table>

**Table I.** Demographic of participants
Multiple logistic regression analysis determined that the students were more likely than others to use tobacco if their friends used tobacco (AdjOR = 1.09; 95%CI = 0.01–2.48), tried alcohol (AdjOR = 2.24; 95%CI = 1.75–3.72) and were currently consuming alcohol (AdjOR = 2.63; 95%CI = 1.52–4.31) (Table IV).

Discussion
This study revealed that 10.80 percent of adolescents were current smokers and 11.10 percent current users of smokeless tobacco. This prevalence was low compared to the findings of the past surveys. This may be due to the fact that the sample was only from four schools representing only one district. Despite the stringent tobacco control regulations in place, the availability of non-cigarette products like baba and khaini brought into Bhutan illegally through porous Indian border is fueling the use of smokeless tobacco among adolescents[28]. In most countries of the South-East Asian Region, reported prevalence of tobacco use was higher among males than females for both youth and adults[6–8, 29].

Apart from smoked products, cheaper and locally produced smokeless tobacco products are widely available. There is a belief among users that smokeless tobacco products are less harmful than the smoked ones resulting in smokeless tobacco products being high in the region[30]. Globally, similar numbers of girls and boys smoked, and evidence suggests that most of these adolescents will continue to smoke into adulthood[31].
In bivariate analysis, boys were 3.22 times more likely than girls to use tobacco. However, logistic regression analysis revealed that being boys was not significantly associated with current tobacco use contrary to other studies[6–8]. Interestingly, in high-income countries, girls having a higher risk than boys of becoming a smoker is widely reported[32].

### Table III. Association between participant’s demographic characteristics and tobacco use among Bhutanese adolescents

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Currently using tobacco</th>
<th>OR(95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>178</td>
<td>23.0</td>
<td>77.0</td>
</tr>
<tr>
<td>Girls</td>
<td>200</td>
<td>8.5</td>
<td>91.5</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11–13</td>
<td>53</td>
<td>11.3</td>
<td>88.9</td>
</tr>
<tr>
<td>14–16</td>
<td>283</td>
<td>14.5</td>
<td>85.5</td>
</tr>
<tr>
<td>17–19</td>
<td>42</td>
<td>26.2</td>
<td>73.8</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>59</td>
<td>11.9</td>
<td>88.1</td>
</tr>
<tr>
<td>Hostel</td>
<td>310</td>
<td>15.8</td>
<td>84.2</td>
</tr>
<tr>
<td>Other’s house</td>
<td>9</td>
<td>22.2</td>
<td>77.8</td>
</tr>
<tr>
<td>Tobacco use by father</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>26.7</td>
<td>73.3</td>
</tr>
<tr>
<td>No</td>
<td>363</td>
<td>14.9</td>
<td>85.1</td>
</tr>
<tr>
<td>Tobacco use by mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>25.0</td>
<td>75.0</td>
</tr>
<tr>
<td>No</td>
<td>370</td>
<td>15.1</td>
<td>84.9</td>
</tr>
<tr>
<td>Tobacco use by siblings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>40.0</td>
<td>60.0</td>
</tr>
<tr>
<td>No</td>
<td>368</td>
<td>14.7</td>
<td>85.3</td>
</tr>
<tr>
<td>Tobacco use by friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>36.7</td>
<td>63.3</td>
</tr>
<tr>
<td>No</td>
<td>348</td>
<td>13.5</td>
<td>86.5</td>
</tr>
<tr>
<td>Ever tried taking alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>119</td>
<td>35.3</td>
<td>64.7</td>
</tr>
<tr>
<td>No</td>
<td>259</td>
<td>6.2</td>
<td>93.8</td>
</tr>
<tr>
<td>Used alcohol in the past 30 days</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>53.3</td>
<td>46.7</td>
</tr>
<tr>
<td>No</td>
<td>348</td>
<td>12.1</td>
<td>87.9</td>
</tr>
<tr>
<td>Your personality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrovert</td>
<td>168</td>
<td>16.1</td>
<td>83.9</td>
</tr>
<tr>
<td>Introvert</td>
<td>210</td>
<td>14.8</td>
<td>85.2</td>
</tr>
<tr>
<td>Your self-esteem</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Low</td>
<td>41</td>
<td>9.8</td>
<td>90.2</td>
</tr>
<tr>
<td>Moderate</td>
<td>262</td>
<td>17.9</td>
<td>82.1</td>
</tr>
<tr>
<td>High</td>
<td>75</td>
<td>9.3</td>
<td>90.7</td>
</tr>
<tr>
<td>Experimented with cigarettes/bidi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>50</td>
<td>75.0</td>
<td>25.0</td>
</tr>
<tr>
<td>No</td>
<td>328</td>
<td>6.1</td>
<td>93.9</td>
</tr>
<tr>
<td>Experimented with SLT/baba</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61</td>
<td>70.5</td>
<td>29.5</td>
</tr>
<tr>
<td>No</td>
<td>317</td>
<td>4.7</td>
<td>95.3</td>
</tr>
</tbody>
</table>
Not surprisingly, the likelihood of using tobacco was higher for Bhutanese students whose friends used or smoked tobacco products than those whose friends did not use them[10–15, 33, 34]. Over 80 percent of the study participants resided in hostels, and this increases the likelihood of getting influenced by their peers being more than that of their parents or siblings. In contrast to past findings, this study also did not find association between adolescent’s tobacco use and their personality type and self-esteem.

Both the bivariate and multivariate analyses found a significant association between the student’s tobacco use and their past or current use of alcohol. Mendel et al. amongst other studies, found that adolescent drinking was the strong predictor of adolescent smoking[35, 36]. The Tobacco Atlas in 2015 showed that current smokers were more likely to be hazardous drinkers than those who never smoked or had previously smoked but stopped, and were at a higher risk of adverse effects of both smoking- and alcohol-related diseases[34]. Meanwhile, in other studies, smoking, alcohol and drug use have been found to be interrelated risk behaviors among adolescents[37–39]. Therefore, this study confirms the inextricable link between alcohol use and tobacco use among adolescents.

The odds of adolescents being a tobacco user was significantly higher among those who had experimented with cigarettes or smokeless tobacco in the past compared to others who did not experiment. Some studies mentioned that experimentation with smoking among adolescents was associated with peers or relatives who smoked, consumed alcohol and used illicit drugs[26, 40]. Thus, there is a definite association between experimentation with tobacco products and the probability of becoming a regular tobacco user among adolescents.

Despite making every effort to conduct sound research, this study has limitations. The district where the study took place was selected based on the convenience of the researchers. The schools in the study were located in rural or semi-rural areas. So, the findings are not generalizable to schools in other districts and places. Another limitation is that all schools currently prohibit tobacco use and are designated as “tobacco-free” places in accordance with the Tobacco Control Act of Bhutan. In this context, it is possible that students underreported their tobacco use status fearing reprisals from school authorities. Finally, some factors that were found to have association with adolescent’s tobacco use in the past findings were excluded from this study, such as the influence of multi-media, attitudes toward tobacco use, illicit use of drugs, etc. Also, less importance was accorded to the issues surrounding smokeless tobacco. Health promotion programs and schools may take these results into consideration while planning and developing tobacco control interventions for our adolescents.

### Conclusion
The proportion of current smokeless tobacco users was slightly higher than that of current smokers. Further, these study results reinforced past findings that having friends who are users of tobacco, ever tried alcohol before or current users of alcohol and experimented with tobacco in the past were significant predictors of the current tobacco use among adolescents.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>B (SE)</th>
<th>Adj. OR (95%CI)</th>
<th>(p)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0.45 (0.55)</td>
<td>0.57 (0.53–1.64)</td>
<td>0.407</td>
</tr>
<tr>
<td>Tobacco use by siblings</td>
<td>-1.31 (1.18)</td>
<td>0.27 (0.02–2.75)</td>
<td>0.269</td>
</tr>
<tr>
<td>Tobacco use by friends</td>
<td>0.18 (0.82)</td>
<td>1.09 (0.01–2.48)</td>
<td>0.021</td>
</tr>
<tr>
<td>Ever tried alcohol</td>
<td>1.81 (0.55)</td>
<td>2.24 (1.75–3.72)</td>
<td>0.047</td>
</tr>
<tr>
<td>Currently using alcohol</td>
<td>1.97 (0.82)</td>
<td>2.63 (1.52–4.31)</td>
<td>0.040</td>
</tr>
<tr>
<td>Experimented with cigarettes</td>
<td>3.68 (0.61)</td>
<td>38.46 (11.91–90.63)</td>
<td>&gt; 0.001</td>
</tr>
<tr>
<td>Experimented with SLT</td>
<td>3.49 (0.52)</td>
<td>32.61 (11.78–90.30)</td>
<td>&gt; 0.001</td>
</tr>
</tbody>
</table>

Table IV. Multiple logistic regression analysis for predictors of current tobacco use among adolescents aged 11–19 years
These findings may help Bhutanese policy makers and program managers to comprehend the present situation of adolescent tobacco use and formulate appropriate and effective tobacco control policies and programs for adolescents in schools.

References


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Delaying first pregnancy in reducing burden of unintended pregnancy among married adolescents in urban slums of Bangladesh

A situation analysis

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Alessio Panza and Ratana Somrongthong
College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

Abstract

Purpose – The purpose of this paper is to assess the effect of delaying first pregnancy in reducing burden of unintended pregnancy (UP) among married adolescent girls in urban slums of Bangladesh. Design/methodology/approach – This cross-sectional survey was conducted among 783 married adolescents in five urban slums of Bangladesh during January 2013–January 2014. Findings – Half of the respondents’ first pregnancy was reported as unintended. Of the respondents, 58 percent with no school education had experienced UP which was 38 percent among respondents with eight year’s education. Respondents who did not willingly agreed to their marriage experienced more UP (61 percent) than those who were agreed/got married by their own choice (51 percent). Respondents having five years of age difference with their husbands experienced more UP (58 percent) than those with ten years of age difference (46 percent). Respondents aged 14 years at first conception experienced 63 percent UP, while the respondents aged 18 years had 35 percent UP experience. Of the respondents, 66 percent who became pregnant within one year of marriage reported their pregnancy as unintended which was 29 percent among those who delayed their first pregnancy for three years. Originality/value – Significant association was observed between pregnancy intention with respondents’ educational status (p = 0.03), age difference with husbands (p = 0.02), age at first conception (p < 0.01) and delaying first pregnancy (p < 0.001).

Keywords Bangladesh, Unintended pregnancy, Married adolescent girls, Delaying first pregnancy, Urban slums

Paper type Research paper

Introduction

Unintended pregnancies (UP) constitute one-fifth of the 210m pregnancies that occur globally each year[1], and are reported to have been either mistimed, i.e. pregnancy occurred earlier than desired, or unwanted, i.e. pregnancy occurred when no more children were desired[2]. Unsafe abortion, often an outcome of an unintended pregnancy (UP),
results in the deaths of 80,000 women every year, 95 percent of which take place in developing countries[1, 3]. Unintended pregnancies among adolescents is an issue of global concern that has considerable implications for maternal, neonatal and child health[4]. In low- and middle-income countries, complications of pregnancy and childbirth among adolescents represent 23 percent of the overall burden of disease and are the leading cause of death among girls aged 15–19 years[5].

In Bangladesh, early marriage and childbearing has led to an adolescent fertility rate of 128 births/1,000 girls aged 15–19 years that is among the highest in the Asia Pacific[6]. Evidence showed that 32 percent of the married adolescent girls aged 15–19 years have begun childbearing, and prevalence of UP at least once in their lifetime among married adolescent girls in urban Bangladesh is 24 percent[7, 8]. Adolescent pregnancy is correlated with pregnancy-related complications, preterm delivery, delivery of low-birth-weight babies, poor educational and economic outcomes for both mother and child and spousal violence [3, 9, 10]. Evidence showed that one-year increase in age at marriage decreases the chance of teenage first birth by 10 percent or more in Bangladesh[11]. Level of education is also identified as a much stronger fact of adolescent motherhood[12]. Findings showed that higher education levels and financial autonomy are vital motives for new family formation and delayed childbearing[13–16]. We designed this study to assess the effect of delaying first pregnancy in reducing burden of UP among married adolescent girls in urban slums of Bangladesh.

Methods
This cross-sectional survey was conducted between January 2013 and January 2014 among married adolescent girls in five slum areas of Dhaka City Corporation of Bangladesh: Mirpur, Shyampur, Kamrangirchar, Shekhertek and Rayerbazar. Slums are the settlements that generally grow in government/semi-government/private vacant land or in abandoned building/houses with very high population density (over 300 persons per acre), predominantly poor housing conditions, poor and inadequate water supply, sewerage condition, sanitation systems, lighting and road facilities[17]. The study population was the married adolescent girls aged 15–19 years living in the selected five urban slums.

Sampling technique
To identify the eligible respondents, the field team members started from a NGO-operated local health facility in each slum using an existing map of the area. They began by spinning a bottle at the NGO health facility to determine the first household based on the direction of the bottle. Inclusion criteria for the respondents were as follows: girls’ aged 15–19 years; married for more than 12 months; having at least one pregnancy or childbirth; and lived in the slum for more than 12 months. If a household had two or more eligible respondents, all of them were listed. If no one in the household found eligible, the team members moved to the next household. After visiting 10,989 households in all five slums, 792 married adolescent girls were identified who fulfilled the criteria. Respondents identified in each study area were then invited to participate in the survey. Among them, nine of the respondents refused to participate in the survey; finally, 783 respondents from the five study areas were interviewed.

The selected 783 respondents were interviewed face-to-face at their household level. All respondents provided informed written consent prior to interview. Written assent was taken from the spouse/guardian/in-laws of the respondents who were below 18 years of age. Six female field research assistants and one female field research supervisor were trained to use a structured questionnaire to collect information on respondents’ socio-demographic characteristics, reproductive experiences and pregnancy intentions and outcomes. One additional visit was made for those respondents who worked outside home and their interviews were conducted at a time convenient to them.
Results

A total of 783 married adolescent girls were enrolled from the five slums and almost equal number of respondents were selected and interviewed from each study areas (Mirpur: 157, Shyampur: 152, Kamrangirchar: 163, Shekhertek: 155, and Rayerbazar: 156).

Socio-demographic information

Study findings showed that mean age of the respondents was 17.7 years. Of the respondents, 17.9 percent never attended school; 8.7 percent of the respondents and 15.8 percent of the respondents’ spouses had completed more than eight years of basic education in schools. Less than one-fifth (14.8 percent) of the respondents worked outside home for earning money and only 7.8 percent of them had the decision-making power in doing family expenditure (Table I).

Marriage and pregnancy history

Majority (91.6 percent) of the respondents willingly consented to their marriage arranged by the family. Age difference between the couples was found ≤5 years among 33.7 percent of the respondents, between 6 and 10 years among 53.8 percent and ≥10 years among 12.5 percent of the respondents (Table I).

Around one-fifth (17.8 percent) of the respondents first conceived at the age of ≤14 years or less and three-fourths (71.4 percent) between 15 and 17 years of age. Only 9.6 percent of the respondents could delay their first pregnancy for three years or more. One-half (50.7 percent) of the respondents reported their first pregnancy as unintended (Table I).

Pregnancy intentions and its association with different factors

Around three-fifths of the respondents in the Kamrangirchar (57.7 percent), Shekhertek (60.6 percent) and Rayerbazar (61.5 percent) reported their first pregnancies as unintended (Table II).

More than one-half (57.9 percent) of the respondents with no school attendance stated their first pregnancy as unintended which was substantially less (38.2 percent) among the respondents with eight or more years of basic education in schools. Education level of the husbands of the respondents had no significant influence on pregnancy intention (Table II).

No difference on pregnancy intention was observed between the respondents’ worked outside home to earn money (51.7 percent) and the respondents who did not work to earn money (50.5 percent). Respondents who had influence on decision making in family expenditure experienced more intended pregnancies (63.9 percent) during their first conception (Table II).

Respondents who did not willingly consented to their marriage which was arranged by the family experienced more unintended pregnancies (60.6 percent) compared to those who happily consented to their arranged marriage or got married by their own choice (51.2 percent) (Table II).

Significant association between age differences among couples and pregnancy intention was observed. Respondents with ≤5 year’s age difference with their husbands experienced significantly more unintended pregnancies (57.6 percent) than those with ≥10 year’s age difference with their husbands (45.9 percent) (Table II).
Respondents aged \(\leq 14\) years and \(\geq 18\) years during the first conception had significant differences (63.3 vs 35.3 percent) on having experience of UP (Table II). Of the respondents, 65.8 percent who became pregnant within one year of marriage reported the pregnancy as unintended which was found 29.3 percent among the respondents who delayed their first pregnancy for three years or more (Table II).
Crude and adjusted odds ratios (ORs) were estimated to determine the factors associated with unintended pregnancies (Table III). Compared to respondents resided in Mirpur slum, respondents in other four slums were more likely to have experience of unintended pregnancies. The magnitude of UP was highest among the respondents in Shekhertek slum (adjusted OR: 3.57; 95% CI: 2.2–5.6) and was relatively lower among respondents in Shaympur, Kamrangirchar and Rayerbazar slums (Table III).

Respondents with eight or more years of basic school education were 48 percent (adjusted OR: 0.52; 95% CI: 0.3–1.0) less likely to have unintended pregnancies as compared to respondents with no schooling experience (Table III).
Difference between couples age was also identified as an associated factor of UP. Respondents with 10 years age difference with their husbands were 52 percent (adjusted OR: 0.48; 95% CI: 0.3 – 0.9) less likely to have experience of UP compared to the respondents with 10 years age difference with their husbands (Table III).

Respondents who first conceived at the age of 18 years were 52 percent (adjusted OR: 0.48; 95% CI: 0.3 – 0.8) less likely to have unintended pregnancies than that of the respondents who first conceived at the age of 14 years (Table III).

Respondents who delayed their first pregnancy for 3 years were 78 percent (adjusted OR: 0.22; 95% CI: 0.1 – 0.5) less likely to have unintended pregnancies as compared to those who conceived within one year of marriage (Table III).

The respondents having decision-making power in family expenditure were 21 percent (adjusted OR: 0.52; 95% CI: 0.28 – 0.96) less likely to have unintended pregnancies as compared to those who had no influence on decision making in family expenditure, though the association was not significant (Table III).

Outcomes of unintended pregnancies
Significant association (p < 0.01) was observed between respondents’ pregnancy intention by their outcomes. Proportion of pregnancies resulted in live births was higher among intended than among unintended pregnancies (91 and 87 percent, respectively). On the contrary, proportion of pregnancies resulted in spontaneous abortion was equal (6 percent) among intended and unintended pregnancies. However, induced abortion was observed only among respondents with unintended pregnancies (5 percent). Nearly one-fifth (19 percent) of

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>OR (95% CI)</th>
<th>Adj. OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mirpur</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Shaymypur</td>
<td>1.51 (0.95–2.42)</td>
<td>1.46 (0.89–2.37)</td>
</tr>
<tr>
<td>Kamrangirchar</td>
<td>2.92 (1.82–4.68)</td>
<td>2.58 (1.58–4.22)</td>
</tr>
<tr>
<td>Shekhertek</td>
<td>3.30 (1.94–5.60)</td>
<td>3.51 (2.18–5.63)</td>
</tr>
<tr>
<td>Rayerbazar</td>
<td>3.42 (2.31–5.07)</td>
<td>3.47 (2.06–5.86)</td>
</tr>
<tr>
<td>Education of respondents (in completed years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1–8 years of education</td>
<td>0.74 (0.49–1.12)</td>
<td>0.82 (0.54–1.25)</td>
</tr>
<tr>
<td>&gt; 8 years of education</td>
<td>0.45 (0.26–0.80)</td>
<td>0.52 (0.27–1.01)</td>
</tr>
<tr>
<td>Age difference between respondents’ and their spouses (in completed years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤5</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>6–10</td>
<td>0.67 (0.49–0.90)</td>
<td>0.62 (0.43–0.88)</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>0.63 (0.37–1.05)</td>
<td>0.46 (0.25–0.80)</td>
</tr>
<tr>
<td>Respondents’ age at first conception (in completed years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤14</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>15–17</td>
<td>0.58 (0.41–0.81)</td>
<td>0.83 (0.55–1.26)</td>
</tr>
<tr>
<td>≥18</td>
<td>0.32 (0.18–0.54)</td>
<td>0.48 (0.28–0.82)</td>
</tr>
<tr>
<td>Delaying first pregnancy (months)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤12</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>12–35</td>
<td>0.46 (0.34–0.63)</td>
<td>0.46 (0.31–0.67)</td>
</tr>
<tr>
<td>&gt; 35</td>
<td>0.22 (0.13–0.36)</td>
<td>0.22 (0.10–0.45)</td>
</tr>
<tr>
<td>Had decision making power in family expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.52 (0.28–0.96)</td>
<td>0.79 (0.41–1.52)</td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table III. Determinants of unintended pregnancies among the study respondents

Difference between couples age was also identified as an associated factor of UP. Respondents with > 10 years age difference with their husbands were 52 percent (adjusted OR: 0.48; 95% CI: 0.3 – 0.9) less likely to have experience of UP compared to the respondents with < 10 years age difference with their husbands (Table III). Respondents who first conceived at the age of ≥18 years were 52 percent (adjusted OR: 0.48; 95% CI: 0.3 – 0.8) less likely to have unintended pregnancies than that of the respondents who first conceived at the age of ≤14 years (Table III). Respondents who delayed their first pregnancy for ≥3 years were 78 percent (adjusted OR: 0.22; 95% CI: 0.1 – 0.5) less likely to have unintended pregnancies as compared to those who conceived within one year of marriage (Table III). The respondents having decision-making power in family expenditure were 21 percent (adjusted OR: 0.52; 95% CI: 0.28 – 0.96) less likely to have unintended pregnancies as compared to those who had no influence on decision making in family expenditure, though the association was not significant (Table III).
the respondents with unintended pregnancies experienced abortion (either spontaneous or induced) when conceived within one year of marriage; however, pregnancy outcomes of all the respondents with unintended pregnancies resulted in live births when they delayed their first pregnancy for three years or more.

Discussion
This study found that one-half of the respondents’ first pregnancy was unintended which was more than twice higher among a similar group of adolescent girls in their lifetime in all urban or rural areas of Bangladesh[7].

This study also identified significant association of respondents’ pregnancy intention with their area of residence, education status, willingness to get married, i.e. willingly consented to marriage, age difference between spouses, decision-making power in family expenditure, age at first conception and delaying first pregnancy.

UP was found higher among the respondents in Rayerbazar, Shekhertek and Kamrangirchar compared to those in Mirpur and Shyampur in this study. Socio-economic condition of the former three slums was poorer than that of the latter two in terms of population density, health service provision and local NGO activities. Another study also found correlation of low socio-economic status and limited education with adolescent pregnancy and adverse pregnancy outcomes[18].

Significant association between mother’s age and UP was also observed in other studies where married adolescent girls less than 16 years of age found three times more likely to have an experience of UP than their comparatively older counterparts (20 years or more)[19].

Significant association was observed between pregnancy intention and age differences between couples. Couples with less age difference experienced more unintended pregnancies than that of the couples with more age differences. It can be assumed that relatively older husbands have better understanding and competence to convince their adolescent wives than that of their younger fellows. Spousal age differences act as an indicator of the nature of the marital bond, and hence influences the couple’s fertility preferences[20].

Findings from the current study also identified that respondents’ age at first conception substantially influenced pregnancy intention, and delaying first pregnancy by three years or more was significantly associated with UP reduction. This was also observed that majority of the intended pregnancies resulted in live births. However, abortion, as a pregnancy outcome, was found two times higher in respondents with unintended pregnancies than that of the intended pregnancies. It is anticipated that several factors including lack of proper knowledge and information, access to information and services, cost of FP methods and services which poor people cannot afford to buy regularly, shyness to buy FP commodities from the pharmacies particularly when there were known elders sitting inside the pharmacy might cause non-use or irregular use of methods resulting UP which, in some cases, compels the young married adolescent girls making decisions regarding poorer pregnancy outcome. Consistent use of FP should help them avoid unintended pregnancies that require complex decisions on whether to terminate or continue with the pregnancy.

This study also revealed that respondents with unintended pregnancies experienced more abortion when conceived within one year of marriage than the respondents who delayed their first pregnancy for three years or more. Although early age at marriage has an important contribution to have had unintended pregnancies but age at conception was identified as a considerable attribute of pregnancy intention.

Findings from this study should be interpreted in light of some limitations. Although multiple attempts were made to reach potential respondents, many employed married adolescent girls may have systematically been excluded from participation in this survey because data were collected during daytime when most of them were at their workplace.
Data on socio-economic status of the respondents in this study were not captured, hence those indicators by study areas could not be compared. Study findings could also be affected by recall bias given that information was based on respondents' self-reports. Additionally, the background and practices of married adolescent girls in urban slums in this study may not be generalized to other parts of the country.

Conclusions

Difference in education, income generation and decision-making power at family level appeared to be playing an important part in the lives of the married adolescent girls in urban slums. Individuals with fewer potential may have less flexibility to adapt their family formation that may resulted in unintended pregnancies and poorer pregnancy outcomes. Promising interventions, such as a platform, or a gathering of the peers to provide relevant comprehensive information and services to the poorest, least educated, married adolescent girls in urban slums to delay their first pregnancy can be a national priority to reduce the burden of early, unintended pregnancies and the associated maternal mortality and morbidities. Engagement and support of families and communities is needed to ensure empowerment of the adolescent girls. Findings from this study are of crucial interest to policy and decision makers who set up policies for adolescent girls’ education, health and well-being. Needs of the married adolescent girls should be addressed during policy and program formulation in Bangladesh.

Acknowledgments

The authors declare that there is no competing interest. The authors acknowledge support from the STEP UP (Strengthening Evidence for Programming on Unintended Pregnancy) Research Program Consortium. STEP UP was funded by UKaid from the Department for International Development (DFID) (GR#0839). The author are thankful to “The 90th Anniversary of Chulalongkorn University Scholarship.” The authors are also thankful to James P. Grant School of Public Health (JPGSPH), BRAC University for providing partial support to the first author’s PhD program. The authors would like to thank Harriet Birungi and Francis Onyango for their valuable feedback in developing the study report and suggestions for improvement of the manuscript.

References


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Ratana Somrongthong can be contacted at: Ratana.So@chula.ac.th

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Development of menu board media for information on sugar, salt and fat related health messages at a senior high school cafeteria in Depok City, Indonesia

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Anhari Achadi  
*Faculty of Public Health, Universitas Indonesia, Depok, Indonesia*

**Abstract**  
**Purpose** – The purpose of this paper is to produce informative menu board media to show sugar, salt and fat (SSF) related health messages in a Senior High School canteen.  
**Design/methodology/approach** – The research model included stages of needs analysis, design, product development and product evaluation. The data were collected from material experts, media experts and 186 high school students. Data were analyzed by descriptive qualitative and statistical analysis.  
**Findings** – The C and D menu boards were selected for their content information and health messages that received higher scores.  
**Originality/value** – There are four stages required in the development of menu board media: needs analysis, menu board design, product development and product evaluation. Further research would be needed to develop the menu boards into a simpler model.  
**Keywords** Indonesia, Menu board media, Nutrition surveys, Health message  
**Paper type** Short report

**Background**  
Indonesia is experiencing a dramatic escalation of non-contagious diseases (NCDs). Basic Health Research Results from 2007 to 2013 show a significant increase in NCDs, including which, stroke cases increased from 8.3 per mile in 2007 to 12.1 per mile in 2013. Furthermore, 61 percent of total deaths are caused by NCDS with cardiovascular disease as the highest cause of death by 37 percent[1]. The main causes of NCDS can be grouped into modifiable factors, such as environmental and behavioral factors and non-modifiable risk factors, including poor diet high in sugar, salt and fat (SSF)[2].  

In an effort to protect the community from NCDS and increase consumer knowledge of SSF content in processed and ready-to-eat foods, the Ministry of Health issued Regulation No. 63 of 2015 as an Amendment to Regulation of the Ministry of Health No. 30 of 2013, on the obligation of the inclusion of SSF information as well as obligatory Health Messages on Processed and Ready Food[3].  

Nevertheless, previous studies found that health related information on food products were of little concern to shoppers[4]. Research confirms that less than 10 percent of people...
review nutritional information before purchasing food[5]. Furthermore, most societies have problems understanding and assessing nutritional information labels[6].

A solution is the inclusion of SSF information and health messages on media boards owned by ready-to-eat food providers, such as school cafeterias. Menu boards are a helpful means of communicating health messages where the effectiveness of the message relies on the ability of the media source to influence the target group who should be able to easily read and understand the relevance of the information detailed[7]. The aims of this study are to provide examples of menu board design to convey SSF information and health messages in school cafeterias.

Methods
This study used a research and development model.

The development model used a modification of the research and development steps proposed by Borg and Gall[8]. Based on the development model, the development procedure in this research was divided into five stages: needs analysis; media design; media production; formative evaluation; and summative evaluation. This study only reached stage 4. Formative evaluation was comprised of one to one evaluation, small group evaluation and field evaluation. Summative evaluation was completed after the program was formatively evaluated and revised.

The needs analysis was assessed by studying government policy to control NCDs. Further research was conducted on conditions of school cafeterias, types of snack food available and types of media information in the school canteen. Needs analysis can be seen in Figure 1.

The media content was based on the Regulation of the Minister of Health of the Republic of Indonesia No. 30 of 2013 on inclusion of SSF content information and Health Message for Processed and Ready Food.

Production of menu board media that lists SSF information as well as health messages with steps are shown in Figure 2.

Formative evaluation was made up of validation, testing and product revision. Validation by material experts included aspects of content whilst media experts reviewed technical and appearance aspects. The trials were conducted through one to one evaluation, small group evaluation and field trials followed by data analysis and product revisions based on the results of the trial. More details can be seen in Figure 3.

Subjects in the media validation stage consisted of one material expert and one media expert. The product trial stage consisted of 196 high school students divided as follows: ten respondents for focus group discussion (FGD) with media board menu A; 55 respondents for site test on menu board media design B (based on FGD results); 71 respondents for site test.
on menu board media design C (based on site test results on menu board with design B); and; 60 respondents for site test on menu board media design D (based on the results of site tests of the design menu board C).

A questionnaire was developed to evaluate menu boards B, C and D. Descriptive statistical analysis techniques used to process data obtained through questionnaires in the form of scores were converted into values or categories, as presented in Table I[10].

Results and discussion
The resulting media products consist of menu boards A, B, C and D. The health message on SSF content for the menu boards was agreed as follows: “Consumption of sugar more than 50 grams, Sodium over 2,000 milligrams or total Fat more than 67 grams per person per day risk of hypertension, stroke, diabetes, and heart attack.”

The presentation of information begins with SSF information for each snack food followed by the health message placed below, in a central position. This is consistent with previous research on readability[11]. Images and easy to read text were also deemed important to successfully imparting this health message[12]. Similarly, contrasting text colors against a single color background helps to facilitate readability[13].

Menu board A comprised of a white background, red and black text and included images of sugar and oil.

Students were questioned on comprehension, acceptability, attractiveness, self-involvement and persuasiveness aspects of menu board A (Figure 4). Menu board B (Figure 5) was made with Green and White writing color and included a pattern in each corner of the board, as shown in Figure 2.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Formula</th>
<th>Score Calculations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>$X &gt; \mu + 1.8 \text{ Sbi}$</td>
<td>$X &gt; 4.3$</td>
</tr>
<tr>
<td>Good</td>
<td>$\mu + 0.6 \text{ Sbi} &lt; X \leq \mu + 1.8 \text{ Sbi}$</td>
<td>$3.4 &lt; X \leq 4.3$</td>
</tr>
<tr>
<td>Enough</td>
<td>$\mu - 0.6 \text{ Sbi} &lt; X \leq \mu + 0.6 \text{ Sbi}$</td>
<td>$2.6 &lt; X \leq 3.4$</td>
</tr>
<tr>
<td>Bad</td>
<td>$\mu - 1.8 \text{ Sbi} &lt; X \leq \mu - 0.6 \text{ Sbi}$</td>
<td>$1.8 &lt; X \leq 2.6$</td>
</tr>
<tr>
<td>Very bad</td>
<td>$X \leq \mu - 1.8 \text{ Sbi}$</td>
<td>$X \leq 1.8$</td>
</tr>
</tbody>
</table>

Notes: Information: ideal mean ($\mu$) = $1/2 \times (\text{Max.} + \text{Min.}) = 3$; Sbi = $1/6 \times (\text{Max.} - \text{Min.}) = 0.7$; max. score = 5; min score = 1; $X$ = actual score

Table I. Score conversion became a value on a scale of five
Menu board C was made in basic color yellow, black SSF text with health messages in red text including the source of SSF data, as shown in Figure 6.

Menu board D (Figure 7) was made with black base color, SSF information writing color is white and the health message in yellow, as shown in Figure 4.

The results were given in Table II.

As indicated on Table II, menu boards C and D contained higher “good” and “very good” scores making them most feasible for use.

In order to achieve optimum results, feedback from high school students as well as media and material experts are crucial to its development. Suggestions for improvement from the above include the following: the base color of the board should be brighter and more neutral; the menu
Figure 6. Menu board C

Menu B Menu C Menu D

<table>
<thead>
<tr>
<th>NO</th>
<th>Component</th>
<th>Score</th>
<th>Category</th>
<th>Score</th>
<th>Category</th>
<th>Score</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Attraction</td>
<td>3.1</td>
<td>Enough</td>
<td>4.0</td>
<td>Good</td>
<td>4.4</td>
<td>Excellent</td>
</tr>
<tr>
<td>2.</td>
<td>Comprehension</td>
<td>4.0</td>
<td>Good</td>
<td>4.3</td>
<td>Good</td>
<td>4.6</td>
<td>Excellent</td>
</tr>
<tr>
<td>3.</td>
<td>Acceptability</td>
<td>3.6</td>
<td>Good</td>
<td>4.0</td>
<td>Good</td>
<td>4.5</td>
<td>Excellent</td>
</tr>
<tr>
<td>4.</td>
<td>Self-involvement</td>
<td>4.0</td>
<td>Good</td>
<td>4.3</td>
<td>Good</td>
<td>4.6</td>
<td>Excellent</td>
</tr>
<tr>
<td>5.</td>
<td>Persuasion</td>
<td>3.8</td>
<td>Good</td>
<td>4.3</td>
<td>Good</td>
<td>4.5</td>
<td>Excellent</td>
</tr>
<tr>
<td>6.</td>
<td>Graphics</td>
<td>3.2</td>
<td>Enough</td>
<td>3.9</td>
<td>Good</td>
<td>4.2</td>
<td>Good</td>
</tr>
</tbody>
</table>

Table II. Result of board menu assessments B, C and D
board should not have a motive or image considering the extent of information that must be delivered; information should be presented in table form so it is easy to read the SSF content for each dish sold in the cafeteria; the selected writing color should contrast with the base color; the health message should be distinguishable by the color of the SSF information; the authorized institution responsible for producing facts should be stated to increase credibility; uncomplicated fonts adjusted to the right distant reading size should be used to aid visibility.

**Conclusion**

It can be summarized that menu boards in cafeterias can be used to effectively educate high school students about health and SSF content in their diet.

**References**


3. Health Ministry of the Republic of Indonesia Regulation of the Minister of Health of the Republic of Indonesia Number 63 of 2015 on Amendment of Minister of Health Regulation No. 30 of 2013 concerning inclusion of sugar, salt and fat content information and health message for prepared food and ready to eat food. Jakarta: Health Ministry; 2015.


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Medical pluralism for community health in Thammasen sub-district, Photharam district, Ratchaburi province, Thailand

Wipanun Muangsakul, Sunti Srisuantang and Ravee Sajjasophon
Faculty of Education and Development Sciences, Kasetsart University, Nakhon Pathom, Thailand

Abstract

Purpose – When reviewing Community Health Development, it is necessary to understand the community context, including community health and details of medical pluralism (MP). The purpose of this paper is to correlate and predict between community health and related factors and delineate phenomenon of MP in Thammasen, Ratchaburi province, Thailand.

Design/methodology/approach – A mixed-methods sequential explanatory design was applied in this research. The quantitative survey was conducted by using an interview questionnaire. The 400 respondents were selected by simple random sampling from 11 villages. For the qualitative study, in-depth interviews were conducted with 37 key informants from selected health professionals, folk healers and local leaders.

Findings – The respondents were 56.5 percent female with a mean age of 53.8 years. The factors relating to community health included: health care behaviors, perceived health status, attitudes toward health care and access to health services. Considering the four predictive variables as a group revealed a 26.2 percent variation in community health. The phenomenon of MP was covered by the following three main aspects: self-health care (SHC)—healthy people pay attention to self-care and used herbal remedies to reduce early symptoms; folk medicine (FM)—some folk healers provide holistic healing, use herbal remedies and transfer knowledge to people who are interested and professional medicine (PM)—some health professionals adopt the concept of integrated medicines such as recommending that patients practice SHC and promote the use of Thai traditional medicine (TTM) and complementary and alternative medicine (CAM).

Originality/value – Health professionals, folk healers and local leaders should provide effective action domains that focus on the following four factors of community health: effective health care behavior, concern for health status, positive attitudes toward health care and accessibility to health services. Regarding MP, integrated medical and health care models should be developed to link SHC, FM and PM (including TTM/CAM).

Keywords Well-being, Community health, Integrated care, Medical pluralism, Health factors

Paper type Research paper

Introduction

Health systems around the world are facing the effects of an aging population, increased levels of chronic illness and escalating health care costs[1]. The cause of health problems includes changes in the environment, personal health behaviors and health service systems. In particular, chronic diseases are likely to increase in both number and severity[2]. As a result, mortality rates due to chronic diseases are rising[3] in addition to the increased number of sick and suffering and the impact on families due to illness[4].

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The authors would like to thank participants who contributed their time to this study. At last, the authors wish to gratefully acknowledge Associate Professor Ong-Arj Viputsiri and associated experts for their valuable comments and suggestions.
Thailand has been developing medical and public health services for a while. In 2002, Thailand passed the National Health Security Act offering Thai people convenient access to Universal Health Care Services (UHCS)\[5\]. However, the health problems of Thai people are not different from the global situation in which health problems are viewed as consequences of social determinants\[6\] in today’s pluralistic society. This situation influenced the 12th National Health Development Plan (2017–2021) and the strategy of the Department of Thai Traditional and Alternative Medicine, that focused on the development of Thai traditional medicine (TTM) and medical integration\[7, 8\]. Consistent with Kleinman’s concept, “Most health care systems contain three social arenas: 1) The popular arena, consisting of the family context of sickness and care, social networks and community activities; 2) The professional arena, consisting of professional scientific medicine and professional indigenous healing specialists; 3) The folk arena, including non-professional healing specialists sometimes classified by ethnographers into sacred and secular groups\[9\].”

In Thailand, Chuangsatiansup has described MP as the existence of a culturally diverse society applying diverse frames for the phenomenon of health\[10\]. Therefore, understanding problems, health-related factors and reflections of the local phenomenon of MP in the community is important today.

In the past, research on community health systems were mostly limited to studying the factors related to health and social determinants of health or disease\[11, 12\]. Nevertheless, there were no studies of the health factors linked to MP. Therefore, solving health problems requires an understanding of the community context reflecting MP. Furthermore, the factors related to community health and contributing to the creation of a healthy community need to be identified. The aim of this study is to correlate and predict between community health and related factors and delineate phenomenon of MP in Thammasen sub-district.

**Definitions**
Health-related factors are health factors that influence individual lifestyle as a determinant of health, including knowledge about health, perceived health status, motivation for health care, attitude toward health care, health beliefs, values, health care behaviors, usage of health services, participation in health activities, usage of local health care resources, social support for health care and access to health services.

Community health refers to the self-health status report of the respondents within the community in balance with other significant factors including the physical, mental, emotional, social, intellectual and spiritual dimensions.

Medical pluralism (MP) refers to the type of medical management in a community, which consists of SHC, folk medicine (FM) and professional medicine (PM).

**Methods**
The study applied a mixed-methods sequential explanatory design\[13\]. It was approved by the Committee for Research Ethics (Social Sciences) of the Mahidol University Institutional Review Board (No. MU-IRB 2016/311.0908).

**Phase 1: quantitative study for describing related factors and predicting the community health of Thammasen**

**Study design.** This phase used a cross-sectional design conducted from November to December 2016 for the purpose of describing related factors and predicting the community health in a sub-district of Thailand.

**Study setting.** The study setting comprised of 11 villages in Thammasen sub-district, Photharam district, Ratchaburi province, Thailand.
The purposive selection was based on the following factors: management of diverse community health systems; availability of rural areas located far from urban areas; existence of the practice to plant and use herbal remedies for health care and a district hospital that adopted a policy for integrating medicine and community participation.

Study population. The study population was composed of Thammasen residents aged 18 years or older.

Study sample. Using Yamane’s[14] formula to achieve findings at a 0.05 confidence interval, the sample could not be less than 371. An additional 29 people were added to account for any possible errors in the process of the study, resulting in a total of 400 respondents. The respondents were required to meet the following inclusion criteria: Thai persons aged 18 years or older; current residence in Thammasen; and understanding of the Thai language. Exclusion criteria included: non-consenting respondents; inability to understand the Thai language.

Research instrument. The questionnaire was validated before use by five public health and health system experts through the Item Objective Congruence Index[15]. The reliability of the questionnaire was determined by conducting a pilot study on 30 persons from Khao Cha Ngum Sub-district, a neighboring sub-district of Thammasen.

The questionnaire in this phase comprised of the following three parts.

Part 1—characteristics. Focused on personal information and health-seeking behaviors.

Part 2—health factors. Likert scales of five points were used to represent the scores for the health factors section[16]. Scores of 1, 2, 3, 4 and 5 were given to “Never,” “Rarely,” “Sometimes,” “Often” and “Very Often,” respectively. For negatively phrased statements, the scores were re-coded. This section contained perceived health status, motivation for health care, attitudes toward health care, health beliefs, health values, health care behaviors, usage of health services, social support for health care and access to health services. In addition, “yes,” “no” questions were used for knowledge about health, participation in health activities and usage of local health care resources. The reliability (Cronbach’s α) for this part was 0.91.

Part 3—community health. The Perceived Wellness Survey Metric (PWS) was used to measure community health or well-being based on the concept of Adams, Bezner and Steinhardt[17]. This metric has six elements of well-being as follows: physical; emotional; social; intellectual; spiritual and mental. The PWS metric consists of 36 questions, and responses to items were rated on a six-point Likert-type scale in which the following response anchors were used as poles for the scale: “Very Strongly Disagree = 1” and “Very Strongly Agree = 6.” No descriptors over the numbers 2 through 5 were used. For negatively phrased statements, the scores were re-coded. The reliability (Cronbach’s α) for this part was 0.90.

Data collection. Following approval from the Ethics Review Committee, the researcher contacted the community leaders requesting permission to collect data from the respondents. All respondents received the objective of this study.

Data analysis. Quantitative data were analyzed by using descriptive and analytic statistics as follows: descriptive statistics; frequency, percentage, mean and standard deviation; Analytic statistics: Pearson’s Correlation Coefficient and stepwise multiple regression analysis.

Phase 2: qualitative study analysis of health-related factors and phenomenon of medical pluralism in Thammasen

Sources of data. Selection of key informants. In-depth interviews were conducted with key informants consisting of the following three groups: six health professionals (two physicians, one registered nurse and three public health officers who provided
their perceptions of MP, factors related to health and health activities); a total of 16 folk healers who provided their perceptions of MP, factors related to health and knowledge about traditional medicine and a total of 15 local leaders aged 35 years or older who provided information about self-health care (SHC), factors related to health and health activities.

Research instrument. The research instruments for this phase included the semi-structured questionnaire, field notes, audio recordings and a camera.

Procedures. The researcher contacted gatekeepers to lead the researcher to key informants. Next, the researcher provided information about the study and the rights of the key informants. Those who were willing to participate in the study were asked to sign an informed consent form. The researcher collected the documentary reviews and interviewed key informants by using semi-structured interviews, audio recordings and observing the community context with photographs.

Data analysis. As recommended by Creswell[18], the raw data were organized and prepared for analysis. First, the interviews were transcribed. Then all the data were read and viewed. The researcher reflected on its overall meaning and data grouping associations. The data were also verified by using triangulation techniques from different participants regarding information about health history including health professionals, folk healers and local leaders. Finally, the researcher interpreted the results, returned the results to key informants for consideration and drew conclusions.

Results

General characteristics
The respondents in this study comprised 400 people. Most of the respondents were women (56.5 percent) ranging in age from 41 to 60 years (41.5 percent, \(X = 53.8, \text{SD} 16.8\). A total of 81.0 percent of the respondents were married and 69.5 percent were educated to primary level. In total, 34.8 percent worked as general laborers, while 56.2 percent (\(X = 4,998.2, \text{SD} 6.8\) had average incomes ranging from 3,000 to 10,000 per month. A total of 48.00 percent had an underlying disease (mostly hypertension) and 93.3 percent were eligible for UHCS services.

Health factors
The respondents had a high level of knowledge about health (cognitive domain) (\(X = 17.0, \text{SD} 3.1\)) with high motivation for health care, attitude toward health care and health beliefs (affective domain) (\(X = 75.9, \text{SD} 7.5, \text{SD} 7.1, \text{and} \ X = 45.3, \text{SD} 6.4\), respectively). The action domain included social support for health care and access to health services (\(X = 44.7, \text{SD} 5.8\) and \(X = 83.3, \text{SD} 7.1\), respectively). At last, community health was at a medium level (\(X = 151.5, \text{SD} 14.3\) (see Table I).

Correlations between health factors and community health
The test of the correlations between health factors and community health with significance at \(p < 0.01\) identified ten variables. The health factors that had the strongest correlations were health care behaviors, attitude toward health care, motivation for health care, health values, perceived health status, social support for health care, health beliefs, access to health services, participation in health activities and usage of local health care resources (\(r = 0.386, 0.338, 0.314, 0.311, 0.296, 0.253, 0.204, 0.203, 0.152\) and 0.143, respectively). At the same time, knowledge about health and usage of health services did not have a statistically significant correlation with community health (\(r = 0.038\) and 0.090) (Table I).
Medical pluralism and community health of Thammasen residents

Factors related to community health

Stepwise multiple regression analysis was used to predict variable ratings. According to the findings, four variables were able to predict community health. These included health care behaviors, perceived health status and attitudes toward health care (i.e. able to predict 15.3, 5.4 and 4.6 percent of the variance, respectively) \((p < 0.01)\). Access to health services were also predictive at 0.9 percent \((p < 0.05)\). Considering the four predictive variables as a group explained 26.2 percent of the variation in community health as shown in Table II.

With reference to Table II, the raw and standard scores can be written as the equation of prediction below.

\[
Y = 2.880 + 0.320(X_7) + 0.363(X_2) + 0.268(X_4) + 0.127(X_{12})
\]

In the first phase, the researcher found certain factors that correlated with community health. In the second phase, the related factors and phenomenon of MP in Thammasen were analyzed.

<table>
<thead>
<tr>
<th>Health factors</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>SD</th>
<th>Meaning</th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge about health ((X_1))</td>
<td>9</td>
<td>24</td>
<td>17.0</td>
<td>3.1</td>
<td>High</td>
<td>-0.038</td>
</tr>
<tr>
<td><strong>Affective domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived health status ((X_2))</td>
<td>40</td>
<td>71</td>
<td>57.2</td>
<td>4.5</td>
<td>Medium</td>
<td>0.296**</td>
</tr>
<tr>
<td>Motivation for health care ((X_3))</td>
<td>24</td>
<td>96</td>
<td>75.9</td>
<td>7.5</td>
<td>High</td>
<td>0.314**</td>
</tr>
<tr>
<td>Attitude toward health care ((X_4))</td>
<td>46</td>
<td>100</td>
<td>76.5</td>
<td>7.1</td>
<td>High</td>
<td>0.338**</td>
</tr>
<tr>
<td>Health beliefs ((X_5))</td>
<td>28</td>
<td>60</td>
<td>45.3</td>
<td>6.4</td>
<td>High</td>
<td>0.204**</td>
</tr>
<tr>
<td>Health values ((X_6))</td>
<td>36</td>
<td>94</td>
<td>64.9</td>
<td>9.4</td>
<td>Medium</td>
<td>0.311**</td>
</tr>
<tr>
<td><strong>Action domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care behaviors ((X_7))</td>
<td>49</td>
<td>90</td>
<td>68.6</td>
<td>6.8</td>
<td>Medium</td>
<td>0.386**</td>
</tr>
<tr>
<td>Usage of health services ((X_8))</td>
<td>16</td>
<td>55</td>
<td>33.4</td>
<td>8.3</td>
<td>Medium</td>
<td>0.090</td>
</tr>
<tr>
<td>Participation in health activities ((X_9))</td>
<td>0</td>
<td>10</td>
<td>5.4</td>
<td>2.4</td>
<td>Medium</td>
<td>0.152**</td>
</tr>
<tr>
<td>Usage of local health care resources ((X_{10}))</td>
<td>3</td>
<td>49</td>
<td>25.6</td>
<td>11.6</td>
<td>Medium</td>
<td>0.143**</td>
</tr>
<tr>
<td>Social support for health care ((X_{11}))</td>
<td>14</td>
<td>60</td>
<td>44.7</td>
<td>5.8</td>
<td>High</td>
<td>0.253**</td>
</tr>
<tr>
<td>Access to health services ((X_{12}))</td>
<td>60</td>
<td>100</td>
<td>83.3</td>
<td>7.1</td>
<td>High</td>
<td>0.203**</td>
</tr>
<tr>
<td>Community health ((Y))</td>
<td>102</td>
<td>187</td>
<td>151.5</td>
<td>14.3</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** \(n = 400. \,*p < 0.05; **p < 0.01\)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Adjust (R^2)</th>
<th>(b)</th>
<th>SE(_b)</th>
<th>(\beta)</th>
<th>(t)</th>
<th>(p)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care behaviors ((X_7))</td>
<td>0.153</td>
<td>0.320</td>
<td>0.062</td>
<td>0.256</td>
<td>5.149</td>
<td>0.000**</td>
</tr>
<tr>
<td>Perceived health status ((X_2))</td>
<td>0.207</td>
<td>0.363</td>
<td>0.056</td>
<td>0.282</td>
<td>6.448</td>
<td>0.000**</td>
</tr>
<tr>
<td>Attitude toward health care ((X_4))</td>
<td>0.253</td>
<td>0.268</td>
<td>0.062</td>
<td>0.223</td>
<td>4.314</td>
<td>0.000**</td>
</tr>
<tr>
<td>Access to health services ((X_{12}))</td>
<td>0.262</td>
<td>0.127</td>
<td>0.052</td>
<td>0.111</td>
<td>2.438</td>
<td>0.015*</td>
</tr>
</tbody>
</table>

Constant \((a) = 2.880; SE_{y_{est}} = 0.305; \ bar{R} = 0.519; R^2 = 0.270; \) adjust \(R^2 = 0.262; F = 36.459\)

**Notes:** \(*p < 0.05; **p < 0.01\)
Factors related to community health classified by medical pluralism in Thammasen

Phenomenon of medical pluralism in Thammasen. Health in Thammasen was managed by a MP system. The participants actively practiced SHC systems as a primary goal toward achieving sound health (98.8 percent), followed by PM (98.3 percent) and FM (38.5 percent). The phenomenon of MP in community health is shown in Table III.

The health-related factors in community health were found to include four variables that explain the phenomenon of MP covering three main aspects as follows in Table IV.

Limitations
The limitations of this study are the variables of knowledge regarding nutrition, exercise, stress reduction, risk behavior and personal hygiene knowledge dimensions, which does not mean health literacy.

Discussion
The findings of this study point to the following four factors affecting community health behaviors in Thammasen: effective health care behaviors; concern for personal health status; positive attitudes toward health care and accessibility to health services. This study suggests that promoting health care behaviors by creating a perceived health status and good attitudes toward health care are consistent with the findings of previous studies. This indicates that positive attitudes and perceived health status concerning chronic conditions are correlated with health[19]. Equally important
The emphasis of promoting social network participation at every level[20]. As argued by several studies, research and development should involve studying knowledge and upgrading skills in FM, TTM and complementary and alternative medicine (CAM) in order to obtain reliable health information leading to the development of health service and product efficacy for patient safety geared toward users’ demand[21, 22]. Moreover, reports have suggested that integrated care health cover should promote disease prevention, early treatment and comprehensive rehabilitation by holistic treatment[23]. In addition, MP integrated medicines and health care models should be developed to link SHC, FM and PM in the health system for convenient access to health services[22]. This finding is consistent with previous research findings. Thus, MP in achieving the community health of Thamma sen is achievable. In particular, the participants in the community need to understand health problems and be ready to solve those problems. Next, in view of the foregoing discussion, the authors propose the management of community health based on the results in this study as detailed in Figure 1.

**Conclusion**

The following four factors were significantly related to improving community health: health care behaviors, perceived health status, attitude toward health care and access to health services. Based on the results, the recommendations for Thailand’s health policymakers should be as follows: focus on health care behaviors, concern about health status, positive attitudes toward health care and accessibility to health services; develop knowledge and skills focused on linking FM, TTM and CAM to provide empirical evidence of safety, efficacy and demands from users; and integrated medicine and health care should be re-designed from hospital to home and vice versa.
References


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Universal Health Coverage (UHC)

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Abstract

Purpose – The WHO Health for All goal of the year 2000 was unreachable due to a number of irreconcilable factors. However, governments agree that a resolution must be found to effectively cope with increasing health care costs. Furthermore, national health insurance schemes must be properly refined to suit local situations. Workable health policies and strategies for caring and treating sick people through reduced or cost effective methods must be developed as part of a Universal Health Coverage scheme. A review of progress made toward achieving the WHO goal of health for all. The purpose of this paper is to explore the government’s role and responsibilities to educate and support society to achieve optimum health.

Design/methodology/approach – This is a commentary piece.

Findings – Participation and involvement of all people of all walks of life in the development and management of their nation’s health care programs is an important requisite of good health for all. This should include financial participation and co-payment into the national health insurance scheme. Furthermore, national health care systems should involve or include the traditional/local and alternative systems of medicine in the most appropriate manner. Health care has to encompass the total range of comprehensive health interventions, inclusive of at least preventive, curative and rehabilitative care.

Originality/value – This paper provides a review of the current health system constraints and assesses the effectiveness of available options by way of ensuring that a country-specific UHC system may be successfully implemented.

Keywords Health, Universal Health Coverage

Paper type Commentary

Health for All by the Year 2000 (HFA/2000)

At the World Health Assembly in 1977, all member states of the World Health Organization (WHO), resolved to set a goal of “Health for All by the Year 2000” for governments and the WHO to collaboratively work toward achieving healthy living standards, thereby ensuring a socially and economically productive life[1].

A year later in 1978, at the international conference on Primary Health Care (PHC) at Alma Ata, USSR, it was declared that a PHC approach was the key to health for all by the year 2000[2]. This approach focused on health care being made universally accessible to individuals and families, with their full participation and involvement, and at a cost that the community and country could afford because it benefits the community’s overall social and economic development.

Based on PHC principles, almost every country developed their respective national strategies for health for all by the year 2000, which was then consolidated into the Global Strategy for Health For All by the year 2000.

The Global Strategy[3] was then implemented coordinately and cooperatively, and more world resources were mobilized to support its implementation. However, it became evident to the WHO that not everyone could equally benefit from the implementation of this global strategy. It was observed that, in general, there were signs of health improvement evidenced by healthier people living for longer, especially in developing countries.

In spite of the fact that the 1977 target for the year 2000 was not completely achieved, the WHO decided to maintain the “Health For All” goal as an aspirational target. Rather than a
fixed target date, this aspirational goal was established to inspire, motivate and encourage all
countries to do more for the health improvement of their people and invest in the improvement
of health systems and infrastructures for the sustainable development of global health.

Post Health for all by the Year 2000 (HFA/2000)
There are many reasons why the goal of HFA/2000 could not be attained. The reasons were
broadly determined in the areas of social, economic and environmental domains outside the
capacity of individual countries to control, particularly in the case of developing countries.
However, due to a global and regional spirit of unity and solidarity, as well as strong
advocacy and the coordinated action of the WHO, efforts were made toward achieving
health for all. A PHC approach was developed and the idea of a Universal Health Coverage
(UHC) system[4] was considered to be an important requisite of the “Health for All” goal.
Many countries worldwide have been keenly interested in the application of the UHC idea,
seeing it as a driving force to support governments toward achieving the goal of good health for
all their people. Due to the increasing numbers of sick in need of effective medical treatment and
care, increased investment is required to meet the demand for improved medical infrastructure
and the improvement of high-quality medical care and services. The cost of medical treatment
and necessary requirement to support and care for the sick is fast becoming a great financial
burden to governments worldwide. In an attempt to finance health care services, several health
insurance schemes have been conceptualized, and also, several national systems of health
insurance have been developed. However, there is not a universally applicable system for any
specific country to cope with the steady increase in health care costs. The number of sick, ill or
disabled people increases unabatedly. The situation is further compounded by the emergence of
chronic non-communicable diseases which need long-term treatment and care that is expensive,
coupled with the great risk of emerging infectious diseases due to environment degradation, as
well as injuries and death due to road traffic accidents and occupational hazards, all of which
are intractable to prevention and control measures.

The main points for consideration and discussion in relation to a cost-efficient plan for
developing a health improvement plan are as follows:

- It is not possible to develop a single model regarding a health insurance scheme or
  system to fit all situations as each model depends on the social and economic context,
  as well as political and governance system, population size, and demographic and
  epidemiologic profiles of the countries concerned.
- In health development, there should be more investment in health promotion and
disease prevention that emphasizes prevention and control of sickness, illness and
disability through community-based multi-sectorial and multidisciplinary
  collaboration and actions against the prevailing health risks.
- Promotion of self-reliance and community resilience in health should be encouraged
  through the support and facilitation of “Self-care” activities at individual, family and
  community levels[5].
- Ambulatory care or community health care should be vigorously promoted and
  supported through the application of a PHC approach as an integral part of national
  health care and national health insurance systems.
- Community health workforce, including the scheme of community health volunteers,
  must be strengthened in both quantitative and qualitative terms to ensure effective
  implementation of a PHC approach at community and grassroots levels.
- Effective functioning of the two-way referral systems from primary care to
  secondary care and tertiary care must be ensured at all time; this referral system is
to guarantee linkage and continuity of health care between family, community, institutions and workplaces.

- It is necessary to keep in mind that the availability of care and services is not exactly the same as the accessibility to care and services; the care and services may be available, but with many reasons they may not be accessible by all people who are in need.

- It may be easier to develop a system of health insurance to cover all citizens in the country of small population size and of small geographical area. But it will be harder in the bigger countries.

- The countries with more resources, a wealthier population and more effective taxation systems have a better chance to be successful in the development of health insurance schemes to serve their entire populations.

- National health insurance systems should be opened to the participation and involvement of private and voluntary organizations with effective regulatory control by the governments. It may be desirable if the national health insurance system is of a mixed type, comprising of both public and private health insurance schemes.

Conclusions
Good health for all people may be effectively achieved through the balanced development of both medical and public health care (curative and preventive) provided in all settings: institutions, communities and workplaces.

Through an effective, comprehensive and integrated health care system, balancing between the development of medical and public health (treatment and prevention) care, nations will be able to achieve the goal of a “healthy population” in real terms, which is indeed needed for successful social and economic development toward national wealth and prosperity.

References

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