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学位論文の要約

(博士論文)

論文題名: Development of Cancer Education Program focusing Adolescent health in Nepal

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Introduction

According to the World Health Organization (WHO,2019a), even though the effects of cancer can be reduced with early detection and treatment, the number of new cases is expected to rise by approximately 70% over the next two decades. In other words, the history of cancer indicates that its annual incidence will rise from 14 million in 2012 to 22 million over the next two decades. Therefore, national policies and programs should be implemented to raise awareness, to reduce exposure to cancer risk factors and to ensure that people are provided with the information and support they need to adopt healthy lifestyles (WHO,2019b). Needless to mention, cancer education is another important aspect of cancer prevention.

According to Central Bureau of Statistics (2011) Nepal census, 24.19% of the population are in 10-19 years age group. Raising cancer awareness among adolescents has potential to increase their knowledge and confidence in identifying cancer symptoms and seeking timely medical help in adolescence and adulthood (Kyle, Nicoll, Forbat & Hubbard,2013). World Health Organization (2017) stated adolescent health as the range of approaches to preventing, detecting or treating young people's health and well-being. Adolescents acquire new habits and behaviors during their adolescence phase. There is little understanding about the knowledge levels of the adolescent population regarding cancer in Nepal, even though they are exposed to risk factors. Hence it is important to educate adolescent boys and girls about cancer prevention.

Theoretical framework of the study

While focusing on adolescents, proper understanding of their behaviors, social networks are important considerations. Because health education and health promotion should be theory and evidence-based, personalized interventions are recommended to take empirical findings and proven theoretical assumptions into account; hence we have included following models and theories to build our study.

A new theoretical framework was prepared based on the HBM and LPM. Perceived susceptibility, perceived severity, perceived benefits of performing the health behavior, and perceived barriers to performing this behavior played an important in initiating healthy

behaviors. The content of the education program was based on these subscales of the health belief model. Although the self-efficacy was one of the subscales of HBM, studies have suggested that high self-efficacy is predictive of high self-esteem. As per Erikson, the main task of adolescents is developing a sense of self, therefore self-esteem was added as other important variables in this model. As peer influences play an important role in the decision making of adolescents, sharing of information through peers/ family was considered an important factor in the adolescence phase. The new cancer education program was based on the HBM and LPM which included peer-led active classes, photovoice, and joint assignments.

Purpose of the study

The general objective of this study was to develop cancer education program using peer and focus on adolescent health in Nepal.

The specific objectives are as follows:

1. To explore the overall knowledge and diffusion of cancer information between students and their mothers.
2. To evaluate the effectiveness of new cancer education program based on Health belief model and learning partner model.

Methods

This study is quantitative, longitudinal, randomised control group pre-test-post-test design. Cluster sampling technique was used; all students present in the class were selected as sample. Cancer education was conducted into three steps.

1. Peer leader training
2. Peer to peer
3. Peer to knowledge sharing partners

Sample size calculation

The sample size calculation is as follows: (based on Donner, Birkett, & Buck, 1981)

α (two tailed) = 0.050 Threshold probability for rejecting the null hypothesis.

Type I error rate $\beta = 0.200$ (Probability of failing to reject the null hypothesis under the alternative hypothesis.)

Type II error rate $q_1 = 0.500$ (Proportion of subjects that are in Group 1) (exposed) $q_0 = 0.500$ (Proportion of subjects that are in Group 0) (unexposed); 43

$1 - q_1 E = 0.500$ (Effect size)

$S = 1.000$ (Standard deviation of the outcome in the population)

The standard normal deviate for $\alpha = Z\alpha = 1.960$

The standard normal deviate for $\beta = Z\beta = 0.842$

$A = (1/q_1 + 1/q_0) = 4.000$

$B = (Z\alpha + Z\beta)^2 = 7.849$

Standardized Effect Size = $(E/S) = 0.500$

Without correction for clustering: Total group size = $N_{total} = AB/(E/S)^2 = 125.58$

$N_1: 63$ $N_0: 63$

$N_{total}: 126$

Considering the response rate of 50%, sample size is recalculated as $= 126 * 2 = 252$

Based on the sample size and considering 50% of response rate, number of participants are recalculated as 252. Hence, combining all students 313 students and their sharing partners participated in this study.

Ethical considerations and Potential bias

This study was approved by the Hokkaido University, Japan and Nepal Health Research Council (2805). Before conducting research, written consent was obtained from all participants. The names, addresses, and contact numbers of students, and names of schools and parents who would disclose their personal information were not collected during data collection. Each student was given a unique code number by a researcher to pair the students with their sharing partners. The participants were free to quit at any time during data collection. Data privacy was maintained after data collection. The data will be stored for five years. Cancer education using peer leaders and photo voice was provided in experiment

groups. To reduce the biasness, cancer education was conducted in all control groups. There was possibility of recall bias. To reduce the recall bias, students were not informed about the study hypotheses being tested. There was possibility of self-learning error while conducting peer-led cancer education. Hence, researcher as well as teachers were present in the class to avoid learning errors.

Data analysis

After each data collection, questionnaires were checked for its completeness. Each survey item was coded and entered at Statistical Package for the Social Sciences, Version 20.0 (IBM, Armonk, NY, USA). Means, percentages, and chi-square, paired t-tests were used to describe the distribution of demographics between the study groups (control vs intervention) and over study stages (baseline, 2-weeks and 3-months). Also, two- way ANOVA repeated measures tests were utilized to measure the main and interaction effects in groups. Probability level alpha will be set at 0.05 level of significance which means confidence interval is 95% (5% change of Type I error or rejecting null hypothesis). Power of statistical test (1- β) is set at 0.80 which means 20% chance of making Type II error (accepting null hypothesis, when it is false in fact).

Results

Students

The mean age of students in was 14.6 ± 1.1 and median age was 14.

In control group, out of 161 students, 50.9% of students were male and 13% of students had members in their family from health field. During baseline, 22.4% of students had talked more about cancer with all including parents, friends, teachers which increased to 59.6% when tested after 3- months.

In intervention group, out of 152 students, 53.9% of students were female and 13.2% of students had members in their family from health-related field. During baseline, 30.3% students had habit of cancer talk which increased to 89.5% after 3- months duration.

Knowledge on cancer

In control group, around 35.4% students realized cancer is said when abnormal cell proliferates randomly and spread around. In intervention group, about 39.5% knew about cervical cancer screening test during baseline. The mean score of total cancer knowledge was 6.4 ± 2.4 and 6.4 ± 2.3 in control and intervention group during baseline which was statistically insignificant. During 3-months, the mean score decreased to 9.8 ± 2.5 in control group and 11.3 ± 1.9 in intervention group. This showed that knowledge retention decreases with time.

Knowledge on risk factors

In both groups, students considered tobacco as major risk factors during baseline. There has been significant rise and fall in the awareness about risk factors with time in both groups.

Sharing partners

There was no statistical significance between gender ($p=0.871$), family history of chronic illness ($p=0.298$), importance of cancer talks within family ($p=0.490$), history of cancer classes ($p=0.303$), and wish to take cancer screening ($p=0.087$) in control and intervention group. Sharing partners in intervention group had talked about cancer with others during baseline ($p=0.008$).

Knowledge on cancer

Around 87.9% sharing partners in control group knew that cancer as one of the leading causes of death in Nepal. The percentage increased to 90.1% during 2-weeks and to 85.7% during 3- months. Around 29.2% of sharing partners in intervention group were aware of cervical cancer as the major female cancer during baseline which increased to 57.2% in 2-weeks and later 55.9% in 3-months.

Knowledge on risk factors

Tobacco was considered as major risk factors by sharing partners in both groups during baseline test. Helicobacter pylori, Human Papilloma virus infection, and ageing were least considered as risk factors.

Discussion

Based on the findings that cancer communication increased knowledge of mothers on cervical cancer, this study incorporated students and their sharing partners, most of whom were family members. Although there are several studies done in Nepal to explore the cancer awareness of adults, little have been known about the impact of cancer communication among adolescents and their partners. Furthermore, this is the first study being carried out in Nepal, pairing adolescents with their sharing partners, linking cancer talk among family members.

This study was conducted in Lalitpur, Nepal. In our study, 51.4% of students were female which was little more than the national census of Lalitpur metropolitan city, 49.1%. The literacy rate among youths (15-24 years) in Nepal was 89.95% while the literacy rate of male and female for 15-25 age groups are 88.2% and 76.7% respectively. There was no significant difference between knowledge and sex of students in both groups. As all students were of same age, the relationship between dependent variables and age were not checked.

Awareness and cancer communication between Nepali students-mothers

Our study explored the overall knowledge and diffusion of cancer information between students and their mothers. This is the first study conducted in Nepal, pairing mothers with their children, adding information about cancer communication in families and linking student knowledge and mothers' screening practices. Our study showed that students and mothers had low knowledge on risks and prevention of cervical cancer. Cancer talk was the strong predictor of knowledge among students. During adolescence, peers play a crucial role in changing the personality, attitudes and behavior of a person (Albert et al,2013). Hence, cervical cancer education programs as well as other health education programs including peer group activities might be more effective in the adolescent group. This study revealed that women who had discussed cervical cancer with other people were more active in taking screening tests. They also had greater motivation and reduced barriers and encouraged other women to take screening tests. Education programs collaborating with mothers and children might help in increasing their perception of susceptibility to cervical cancer and in increasing

their cancer screening uptake in the future. Students can share knowledge about the education program with their mothers and other family members, increasing their knowledge levels, resulting in the diffusion of cancer knowledge, which supports the Learning Partner Model (Suketomo et al,2016).

Evaluation of new cancer education program

Based on the findings that cancer communication increased knowledge of mothers on cervical

cancer, this study incorporated students and their sharing partners, most of whom were family members. Although there are several studies done in Nepal to explore the cancer awareness of

adults, little have been known about the impact of cancer communication among adolescents and their partners. Furthermore, this is the first study being carried out in Nepal, pairing adolescents with their sharing partners, linking cancer talk among family members. This study was conducted in Lalitpur, Nepal. In our study, 51.4% of students were female which was little more than the national census of Lalitpur metropolitan city, 49.1%. The literacy rate among youths (15-24 years) in Nepal was 89.95% while the literacy rate of male and female for 15-25 age groups are 88.2% and 76.7% respectively (Central Bureau of Statistics,2011). There was no significant difference between knowledge and sex of students in both groups. As all students were of same age, the relationship between dependent variables and age were not checked.

Impact of new cancer education program on students

The main objective was to develop new education program using Health Belief Model and Learning Partner Model which could be easily adaptable in Nepali classroom settings. Health motivation is the central focus of HBM (National Cancer Institute,2005). Bryan et al(2016) stated that adolescents were known to be highly motivated to live up to important values that

are shared with their peers. However, in preventive health behaviors, HBM does not suggest a

strategy for changing health-related actions. Hence, in order to address the peer roles, Learning

Partner Model was integrated with HBM to develop new education program. The integration of these two health models addressed the health behaviors of students and diffusion of information in families. As adolescence brings significant physical, psychological, and social changes, unhealthy habits like tobacco or alcohol use, lack of physical activity, can jeopardize

their current and future health. Therefore, promoting healthy behaviors, and taking steps to protect oneself from health risks are critical for disease prevention (Bonnie, Stroud & Breiner, 2014).

In this study, students were asked to choose a sharing partners with whom they are comfortable to talk about cancer. The impact of cancer education was also checked in partners. There was change in different subscales of health belief of sharing partners after 3-months follow up. The learning partner model can be used to enhance the diffusion of health information to friends or family members of the individuals attending the cancer education sessions⁸¹. The social and behavior change communication plays essential role in addressing all behavioral and social aspects of disease prevention and control. Individuals are more likely to practice desired behaviors when the community believes in their importance and if proper information are available. Communication can help communities in informing, motivating and equipping to practice necessary protective behaviors in different epidemics, endemics and emergency preparedness⁸².

Limitations

1. The cervical cancer survey was a cross-sectional study; hence, it cannot be used to analyze behavior over a longer period to time. Second, convenience sampling was used for data collection in this study, which might have caused biases.

2. In the school-based cancer education program, we used pre- post- test design, so it cannot be presumed to illustrate cause and effect as participants' knowledge on the cancer topic may have changed as a result of other factors. The main problem with this design is that it improves internal validity but sacrifices external validity to do so.
3. We prepared original questionnaire as there was no valid Nepali version questionnaire available to measure cancer knowledge as well as health beliefs and self-esteem. The instrument needs further evaluation and development based on Nepali settings.
4. One of the most common limitations was the time taken for this study. Being longitudinal study, the non- response rate of sharing partners during 3-months follow up was high. Hence, we excluded data of participants who did not submit questionnaire of their sharing partners or vice versa.
5. An increased number of follow ups would have enabled a more detailed evaluation of the changes in students' knowledge, beliefs, self-esteem and practice over time.
6. The main problem in self-esteem questionnaires, including the Rosenberg scale, is the social desirability, that is, the defensive self-esteem, denying personal problems and inadequacies, and making a false good impression.

Conclusion

This study showed the awareness of cervical and general cancer among students and their family members. The school-based cancer education program showed that school is a potential venue for cancer education and increasing cancer awareness among children may be an investment for future health as well as the quality of life. This study showed that this new cancer education program has the potential to be a beneficial method in Nepali classroom settings. It not only encourages active learning but also helps students to participate visibly in problem solving and reflecting more sustainably. Using peer-learning strategies do not require abandoning the lecture format. Adding small active learning strategies can make lecturing more effective for student learning inside classroom settings and is also helpful in large classrooms. Health communication with parents, neighbors or communities was effective in the dissemination of information about cancer in this study. Health communication is a multifaceted and multidisciplinary approach to reach different audiences

and share health-related information to influence and support individuals, communities to improve health outcomes. Hence, an efficient health communication approach can be adopted while conducting different health programs/ interventions which might help in the health protection of family, communities, and populations. A multilevel approach to promoting physical activity, combining school-based interventions with family and community involvement and educational interventions with policy and environmental changes, is likely to be effective among adolescents and should be 90 promoted. Interventions incorporating community and family-based approaches using local support systems are not only effective to reduce the social barriers for behavior change among the school-children but are also helpful in reinforcing adolescent's self-perception on harmful behaviors. This study showed an increase in knowledge, retention of health belief subscales, an increase in self-esteem and initiation of healthy practice among students in a new cancer education program. Hence, this new program was effective in these settings