Effects of health promotion courses on development of healthy lifestyle behaviours and e-health literacy in nursing

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ABSTRACT

Aims: The aim of this study is to determine the effects of Health Promotion courses on development of healthy lifestyle behaviors and e-Health literacy in nursing students.

Methods: Between December 2015 and April 2016, this quasi-experimental study was conducted with 133 students taking a Health Promotion course in the nursing department of a university. The data were collected by pre-test and post-test questionnaires. 12 weeks after baseline assessment, change in the healthy lifestyle behaviors and e-Health literacy was determined.

Results: Mean participant age was 19.05±0.28 years (min=18, max=20), and 92.5% of the students were female. After the course, students achieved higher scores in the e-Health Literacy Scale (before= 27.09±4.48; after= 30.16±4.28), Health-Promoting Lifestyle Profile overall score (before= 137.75±17.09; after= 145.07±20.70) and all of its subscales; this increase was statistically significant in all subscales except Self-Actualization (before= 41.34±5.18; after= 41.37±5.99), Interpersonal Support (before= 22.01±3.30; after= 22.44±3.23) and Stress Management (before= 20.81±2.83; after= 20.92±3.48) subscales ($p<0.05$). A weak ($r=0.294$) and statistically significant ($p=0.001$) positive correlation was found between the final eHealth Literacy scores and Health Promoting Lifestyle Profile scores of the students.

Conclusions: In conclusion, the Health Promotion course has contributed positively to development of healthy lifestyle behaviours in nursing students. The course also imparted increase of e-Health literacy.

Introduction

The prevalence of lifestyle-related chronic disease is ever increasing, and its impact on healthcare will remain an important issue in the future (1,2). According to the Global Status Report (2008), about two-thirds of deaths in the world are caused by cardiovascular disease, cancer, diabetes, chronic lung disease and the unhealthy lifestyle habits (smoking, alcohol use, malnutrition, lack of activity) that these conditions originate from. The treatment of chronic diseases is life-long and the cost is very high (3). As a result, it is becoming increasingly important to prevent chronic diseases and to obtain healthy lifestyle behaviours. For example, regular physical activity plays an important role in the prevention of chronic diseases, including cardiovascular disease, type 2 diabetes and cancer (4). Healthy lifestyle behaviours (HLB) are defined as 'behaviours that an individual believes in and practices to stay healthy and to prevent illnesses' (1). These behaviours are shaped by personal experience, knowledge, values and expectations that are acquired through daily activities; and are influenced by social, cultural, economic, physical and biological factors (5). Health workers exhibit more positive health behaviors than other people. Concerning disease prevention and health promotion issues, nurses are expected to be role models. Nursing students of today will soon become health care providers (6). It is thought that nursing students who adopt and exhibit healthy lifestyle behaviors during their professional lives can motivate their patients to improve their health. Thus nurses need to provide sufficient information on behaviors leading to disease prevention and health promotion (7). Nurses should have the ability to understand and evaluate these health information. At this point, it is important to know the nurses' level of health literacy (8). According to results of some studies, individuals with high health literacy were found to have positive health behaviors. For example; it has been shown that participation in health screenings of individuals with high health literacy, exercise habits and nutritional behavior are better (9,10). For this reason, we have examined the impact of the health promotion course on students' healthy lifestyle behaviors and e-health literacy in this study.

Health Literacy (HL) is defined as having the knowledge, motivation and competence to access, understand, value, and use health information that enables individuals to reach decisions in their daily lives, to raise and sustain their quality of life, to

improve their health and to prevent illnesses (9). In parallel with the developments in technology, widespread use of the internet has increased the possibility of acquiring health information online (11). Health information from the internet is an unsafe resource for individuals. This is because the limitless information available on the internet is not all accurate or reliable. For this reason, it is important to improve the ability of individuals to understand and utilize health information found on the internet (12). Nursing professionals need to be knowledgeable about e-Health Literacy (e-HL) to properly support patients and their families. Because, low health literacy levels are also associated with serious health outcomes such as low health information, increased incidence of chronic illnesses, poor disease indicators and less use of preventive health services. As a result, inadequate health literacy leads to deterioration in health status and an increase in health care expenditures (13,14).Today, nurses and nursing students should be able to assess patients in terms of health literacy and intervene when needed so that important health information can be conveyed to the patient (15-17).Protecting and improving public health, and bringing HLB to individuals are only possible by increasing the e-HL level of the community through planning and implementation of effective programs. Nurses must have adequate levels of HLB and e-HL from the time of their training; for themselves, and for the individuals/families they provide care for (15-17). In many studies conducted with nursing students, dimensions such as adequate and balanced nutrition, stress management, regular exercise, self-actualization, interpersonal support and taking responsibility for the protection and development of the individual's health were examined and the interventions had positive results (18-20).

Nursing students' school curricula should include courses for the awareness, improvement and sustainment of health (16,21).The courses in Turkey were reorganized in the National Core Training Program for Nursing owing to changes in community health needs and primary health problems, changes in policies and practices of health care provision and nursing care services, and to the application of criteria that the European Union sets for nursing education and the "Bologna Compliance Process"(21,22).

In our country, numerous studies aimed at determining the HLB of nursing students can be found in the literature (18-120). However, there are no published studies on the effects of Health Promotion courses on e-HL levels or HLB of students. This study aims to determine the effects of the "Health, Disease and Health Promotion" course on nursing students, their HLB and e-HL. The development of healthy behavior and health literacy of nursing students are very important for a healthy society. The nursing curriculum should be prepared to encourage and support healthy lifestyle behaviors and health literacy for students. Nurse training programs are responsible for preparing nursing students to take on these roles. This research will contribute to initiating initiatives for health promotion and health literacy issues in the nursing curriculum.

Methods

Design, Setting and Sample

The research was conducted in quasi-experimental design. The study population consisted of 133 students in, Ankara, Turkey. The ethical approval number and date are 09.2018/219. It is targeted to reach all students. Convenience sampling was utilized. A total of 133 students met the study criteria and were willing to participate. To be eligible, the participants had to meet the following criteria;

- First-year student in the School of Nursing
- First time receiving the "Health, Disease and Health Promotion" course

This study included an intervention which used pre-test and post-test evaluations. Post-test was done 12 week after the end of the health promotion course.

The research universe consisted of first-year nursing students taking the "Health, Disease and Health Promotion" course in the one school of nursing in the academic year 2015-2016. In the School of Nursing where the research was conducted; integrated education is provided in compliance with the Nursing National Core Training Program (HUCEP) criteria. The curriculum is based on active education techniques and is generally arranged to lead from topics of health to disease, concrete to abstract, with an approach that keeps age in consideration, following the systematic of primary, secondary and tertiary prevention, with a focus on disease prevention, early diagnosis, treatment and rehabilitation services; and designed in a way that presents different disciplines as body systems in a coordinated manner in later years of education. Within this scope, "Health, Disease and Health Promotion" courses are given in the first semester of the first year. Through the lectures and assignments, students are required to make use of a wide range of resources such as reference books and the internet (e-library, e-journals, etc.) and to work individually and as a group. The ability to access and utilize information is important at these stages.

The "Health, Disease and Health Promotion" course is given as a 56-hour theoretical-practical course in the first semester of the first year. The aim of this course is to provide the students with the knowledge and skills to improve their own health and the health of the individuals of they serve, in accordance with the latest scientific developments. The students completed the data collection forms under the observation of the researchers in the classroom. It took about 15-20 minutes to fill in the forms. The lectures were given by the researcher. But this researcher was not the one who applied the research tests (pre-post test).

"Health, Disease and Health Promotion" course program is as follows:

Pre-course meeting: A meeting of all instructors, where course objectives are discussed.

Course introduction: Two instructors present the course subjects, lecturers, teaching methods (Q&A, group discussion, direct instruction, and role play), planned field trips, reference books and internet links. Students are assigned to workgroups and questions are answered.

Student Preparation Hours: Depending on the lecture, one or two hours are given as preparation hours and constitute about 10% of total course time. In this stage, the lecturer responsible for the course supports the students by giving the research questions related to the topic. During these hours, students study and research the subject individually or as groups. They are requested to bring clothing and equipment suitable for the course, and are required to present the documents they prepare with the use of a video projector / overhead projector / flipchart.

Course content: This course includes subjects such as the definition of health and its historical development, health-related cultural factors and health belief model, general factors affecting health and health care, belief systems, scientific and technological developments, the concept of health, natural progression and prevention of disease, cell damage and adaptation, food-drug interactions and the role of the nurse, basic concepts in health promotion, precede-proceed model, health by age group, perception of disease, promotion of health by age group, personal hygiene principles, exercise and health promotion, healthy aging, protection and promotion of mental health of individuals, diet and health promotion, characteristics of sleep and rest, health education, theories and methods of teaching, and techniques of teaching material preparation.

Field trips: Visits to primary care institutions, Pathology and Pharmacology departments, admission of volunteer students as patients to 10 different wards (internal medicine, surgery, orthopaedics, etc.) for one night, and sharing of experiences with their classmates the next day are all part of the course.

End-of-course evaluation: A meeting attended by all instructors after the end-of-course exams, discussions are made on whether the course objectives have been achieved and plans for next year are made with feedback from the students.

Ethical considerations

Permissions was obtained from the Gulhane Military Medical Academy Ethics Committee, institutional approval was obtained from the School of Nursing, and lastly, verbal (and written) consent was obtained from the students (12th session, approval no.595). Data collection began only after a student provided written informed consent to participate. Before obtaining this consent, researchers explained the purpose, method, and process of this study to students and stated clearly that they had the right to withdraw at any time.

Data Collection

Data collection forms were collected in the classroom by the face-to-face interview method. The interviews lasted 15 to 20 min.

To protect privacy, each participant was assigned a unique code, which the participant created by following instructions on the first page of the questionnaire. This code was used to match the participant's initial responses to their follow-up responses and for data entry.

The data collection form was prepared by the researchers and included; the student information form, Health Promoting Lifestyle Profile (HPLP) and e-Health Literacy Scale (e-HEALS).In the student information form, age, gender, overweight, income, smoking and alcohol habits etc. socio-demographic characteristics of the student.

Health Promoting Lifestyle Profile (HPLP) was developed by Walker, Sechrist and Pender in 1987. Its validity and reliability studies in Turkey were conducted by Esin (1999). The scale measures health-promoting behaviours associated with a healthy lifestyle. All questions on the HPLP are positive. There are no negative questions. The scale used is a 4-point Likert scale. Items are scored as "Never" = 1, "Sometimes" = 2, "Often" = 3, and "Routinely" = 4. The scale consists of 48 items and has six subscales. The subscales are "Self-Actualisation", "Health Responsibility, "Physical Activity", "Nutrition", "Interpersonal Relations", and "Stress Management". Scores range from 48 to 192. Increasing scores on the scale indicate that the individual applies specified healthy behaviours at a high level (23). The Cronbach alpha value in this study was 0.92.

Table 1. Sociodemographic characteristics in participants (n=133)

Variable	n	%
Gender		
Female	123	92.5
Male	10	7.5
BMI		
Underweight	46	34.6
Normal	80	60.2
Overweight	7	5.3
Family structure		
Nuclear family	116	87.2
Extended family	17	12.8
Maternal education status		
Illiterate	2	1.5
Literate	4	3.0
Primary education	72	54.1
High school	41	30.8
University	14	10.5
Paternal education status		
Literate	3	2.3
Primary education	46	34.6
High school	46	34.6
University	38	28.6
Income		
Income higher than expenditure	28	21.1
Income equal to expenditure	86	64.7
Income lower than expenditure	19	14.3
Smoking habits		
Currently smoker	13	9.8
Former smoker	3	2.3
Never	117	88.0
Alcohol habits		
Currently drinker	4	3.0
Former drinker	1	0.8
Never	128	96.2
Diagnosed chronic disease		
Yes	11	8.3
No	122	91.7
Chronic medication use		
Yes	5	3.8
No	128	96.2
Self-perceived health status		
Very good	33	24.8
Good	90	67.7
Fair	10	7.5

e-HEALS (e-Health Literacy Scale) was developed by Norman and Skinner in 2006 to determine traditional literacy, health literacy, information literacy, scientific literacy, media literacy and computer literacy. The 8-item scale measures a range of health-related internet skills. All questions use a 5-point Likert scale that is scored as follows: 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree. Lowest score is 8, while the highest score is 40. A higher score indicates a higher level of eHealth literacy (24).The Turkish va-

Table 2. HPLP and e-HEALS subscales for pre- and post-education (n:133)

Variable	Pre-test		Post-test			
	M ± SD	min- max	M ± SD	min-max	Sig.*	p
Self-Actualisation	41.34±5.18	24-52	41.37±5.99	28-52	0.05	0.957
Health Responsibility	24.03±4.89	12-37	26.63±5.57	14-40	5.41	0.001
Physical Activity	12.15±2.98	6-20	13.90±3.20	6-20	6.13	0.001
Nutrition	18.10±2.76	9-24	18.89±2.71	13-24	2.87	0.005
Interpersonal Support	22.01±3.30	12-18	22.44±3.23	13-28	1.44	0.151
Stress Management	20.81±2.83	13-28	20.92±3.48	12-28	0.33	0.735
HPLP overall score	137.75±17.09	86-177	145.07±20.70	97-192	4.10	0.001
e-HEALS	27.09±4.48	13-39	30.16±4.28	16-40	6.18	0.001

Note. M=mean; SD =standard deviation. * Paired sample t-test , HPLP = Health Promoting Lifestyle Profile; e-HEALS= e-Health Literacy Scale.

Table 3. Contribution of "health, disease and health promotion" course to healthy lifestyle behaviours and e-health literacy (n=133)

	Yes		No	
	n	%	n	%
Contribution to Healthy Lifestyle Behaviours				
Regular and balanced diet	89	66.9	44	33.1
Regular exercise	85	63.9	48	36.1
Regular and quality sleep	24	18.0	109	82.0
Insight into the value of healthiness and willingness to visit the nearest health institution when sick	89	66.9	44	33.1
Excellent relationships with peers	51	38.3	82	61.7
Ability to cope with stress (especially before exams)	24	18.0	109	82.0
Self-awareness	80	60.2	53	39.8
Contribution to e-Health Literacy				
Knowing where and how to find health-related information on the internet	77	57.9	56	42.1
Ability to determine if the information found on the internet is of high quality or not	85	63.9	48	36.1

lidity and reliability study of the e-HEALS was conducted by Coskun and Bebis on adolescents in 2014 and the Cronbach alpha value was 0.78 (25). The Cronbach alpha value in my study was 0.88.

Data analysis

All data in this study were analysed using SPSS 15.0 (SPSS Inc., Chicago, IL, USA).Descriptive statistics are shown as number and percentage (%) for counted variables, mean ± standard deviation(± SD) and minimum-maximum (min-max) values for measured variables. Assumption of normality for continuous variables was tested by a one-sample Kolmogorov-Smirnov test. For intergroup comparisons, Paired sample t-test was used for variables with normal distribution, Pearson correlation test was used to determine the degree of linear relationship between two variables. The level of significance for all analyses was set at p=.05. All p values below or equal to this level were considered statistically significant, all values above this level were considered non-significant.

Results

Mean participant age was 19.05±0.28 years (min=18, max=20), and 92.5% of the students were female. All students lived on campus, as required by the university. Of the participants, 64.7% reported sufficient income, 9.8% reported smoking, 3% reported alcohol use, 3.8% reported chronic medication use, and 67.2% considered their health status to be 'good' (Table 1). Pre-test data shows that 39.1% of participants stated that the internet was useful in making health-related decisions and 54% thought internet access was 'important'.

Differences between pre- and post-intervention values for e-HEALS and HPLP subscales were analysed using paired sample t-test for dependent variables. The results showed that while mean scores in Self-Actualisation, Interpersonal Support, and Stress Management demonstrated increase, this change was not statistically significant (p>0.05). Health Responsibility, Physical Activity, Nutrition, and HPLP overall score averages, and e-HEALS score averages showed statistically significant increase (p=.001) (Table 2). In addition, there was found to be a weak (r=.294) and statistically significant (p=0.001) positive correlation between e-HL and HPLP scores in the post-test data.

Contributions of the "Health, Disease and Health Promotion" course to healthy lifestyle behaviours have been expressed; 66.9% reported a regular and balanced diet, 63.9% reported regular exercise, 24.0% reported regular and quality sleep, 66.9% reported having gained insight into the value of healthiness, 38.3% reported having excellent relationships with their peers, 18% reported being able to cope with stress, 60.2% reported possessing self-awareness as a result of the course. In e-Health literacy, all students reported increased e-Health awareness, 57.9% reported knowing where and how to find health-related information on the internet, 63.9% reported being able to determine if the information found on the internet was of high quality or not (Table 3).

Discussion

In this study, quasi-experimental was performed to determine the effectiveness of Health Promotion course on development of healthy lifestyle behaviours and e-Health literacy in nursing students. By adopting HLBs and improving their e-HL, nursing students can acquire the skills to live healthy, to catch up with the times, to access up to date, accurate and high quality health information, and to transfer them to the people they provide care for (15-17).

In this study, which was done to determine the effects of the Health Promotion course on HLB and e-HL, the students had increased scores in the e-HEALS and HPLP scales (overall score and all sub-dimensions) after the course. The results showed that while mean scores in Self-Actualisation, Interpersonal Support, and Stress Management showed statistically non-significant increase; Health Responsibility, Physical Activity, Nutrition, and HPLP overall score averages, and e-HEALS score averages showed statistically significant increase ($p<0.05$). Similar studies conducted with student nurses by Alpar et al. (26) and Hsiao et al. (27) showed that total scores obtained on the healthy lifestyle behaviour scale before and after nursing education increased at a statistically significant level. Our results were consistent with the results of these two studies.

Studies have shown that HPLP scores increase after training programs (18,23,28). These results are similar to our study results. This result can be interpreted to that the course positively influences the HLBs of the students, that the goals of the course have been reached, and that this course should continue to be a part of the curriculum.

Self-actualisation means that the individual knows herself, knows her own strengths and weaknesses, is aware of her own achievements, is satisfied with herself, and believes that she is valuable. And this study, the mean Self-Actualisation score was found to have improved significantly with instruction (before, 36.43 ± 5.03; after, 37.78 ± 4.71) ($p<0.05$) (23). The highest score that can be achieved in the Self-Actualisation sub-dimension is 52; and while the difference was not statistically significant; the mean Self-Actualisation score was noticeably higher after the course (41.37 ±5.99). But our study, more than half of the students (60.2%) reported improved self-awareness after the course. Hui (29) reported that the effect of education given to undergraduate nurses in Hong Kong had significant differences of self-actualisation subscales among the various years of students.

Health Responsibility, defined as valuing gone's own health and being responsible for it, affects the individual's quality of health care and determines their level of participation in their own well-being. It also includes the individual's ability to effect changes in protective, preventive, and health-promoting behaviours related to their own health. Studies conducted in nursing students have found that health promotion courses result in significant changes in the Health Responsibility sub-dimension (19,20,28). Just as described in literature, this study also found that the health promotion course was effective in increasing the self-responsibility of nursing students. In addition, after this course, a majority of the students stated that they better understood the value of health and they will visit the nearest health institution when they are sick.

Inactivity in young people is associated with obesity, and lifestyle changes are proposed against obesity (30). In the literature, it was found that there was statistically significant difference in exercise score averages of students after instruction ($p<0.05$) (14). In another study, there was a statistically significant difference in the mean Physical Activity scores of nursing students after education. However, Yıldırım et al. (20) found that there was no statistically significant difference between the pre- and post-intervention Physical Activity subscale scores of the students. Similarly, Tambağ&Turan (28) did not find any statistically significant difference between the pre-and post-instruction Physical Activity score averages of the students. The HPLP Physical Activity subscale scores of the students were most affected by available sports facilities and place of residence ($p<0.05$). In this study, there was a statistically significant increase in the Physical Activity scores of our students. As all students lived on campus, it was assumed that the presence of a gym and various sports facilities, and the increased awareness were crucial factors in this improvement.

The relationship between nutritional habits and lifestyle has been examined in this study (31). In another study, nursing students' average pre- and post-course Nutrition scores had increased and there was no change in BMI, and no statistically significant difference was found (19). Yeh et al. (32) evaluated the effects of a healthy-lifestyle-promoting program taught as part of an undergraduate community health nursing course. This study indicated a positive change in nutrition as a result of the program. In our study, the majority of the students (66.9%) stated that they had a regular and balanced diet, and the mean Nutrition score of the students increased after the course, and a statistically significant difference was found. It appears that the most important factors in this change were not only the increased knowledge and awareness about healthy nutrition, but also the fact that the students were living in dormitory conditions and that three balanced and nutritious daily meals were provided free of charge.

Stress is a psychological factor affecting the academic performance and well-being of nursing students. And emotional and physical tension arising from our response to trouble in the outside world (33). Student nurses may be exposed to interpersonal and environmental stress (34). For this reason, interpersonal support and effective stress management are very important. The changes between pre-test and post-test results were found to be statistically significant for the Interpersonal Support subscale, but not for the Stress Management subscale mean scores (20). But Lim and Kim study showed that Autogenic Training has a positive effect on stress response in nursing student (35). Our study, although there was an increase in Interpersonal Support and Stress Management scores of nursing students after the intervention, the difference was not statistically significant.Our study finds difference with the work done

by Lim and Kim. The reason for this is thought to result from the use of different training methods for stress management.

Individuals, especially young people, are increasingly using the internet to access health information about HLB. Gray et al. (36) reported that although adolescents frequently use information technologies, they have difficulty understanding and utilizing online health information. It has also been noted that this user group often encounters incorrect, misleading or low-quality information on the internet, and this could lead to major problems (12). Even though the importance of e-HL is well understood, very little research has been published on the e-HL levels of adolescents, the factors influencing e-HL, and what needs to be done to improve e-HL. In one study, e-HL was reported to increase with interventions on nutrition, caloric intake and physical activity (37). Another study reported that people with higher e-HL were more likely to use the Internet to find answers to health-related questions (9). In our study, the difference in mean e-HEALS scores between pre- and post-testing were found to be statistically significant ($p<0.05$) (Table 2). In addition, there was found to be a weak ($r=0.294$) and statistically significant ($p=0.001$) positive correlation between e-HL and HPLP scores in the post-test data. This indicates that students with higher e-HL scores have a higher HPLP score, and may exhibit more positive health behaviours. Nursing educators should include e-health literacy skills into the curriculum.

Similar studies conducted with student nurses by Tubaishat and Habiballah (38) and Park and Lee (39) reported that undergraduate nursing students are aware of the available online health resources and able to find it and use these resources, but have difficulty differentiating between high and low quality resources. Our study all students stated in the post-test that they had gained information and awareness about e-HL, of which they had never heard before. In addition, more than half of the students know where and how to find health-related information from the internet, and has the ability to determine differentiating between high and low quality resources. E-HL education is important to enable individuals to distinguish, evaluate and interpret health information obtained over the internet.

Limitations

One limitation of this study is that it was conducted in a single school of nursing with a small sample. Other limitations include the fact that there was no control group. The school is a boarding school. All students are given the same food and live in the same place.

Conclusion

These findings show that, our student nurses had gained valuable information and awareness about self-responsibility, balanced nutrition and physical activity. Although higher average scores were obtained in the Self-Realization, Interpersonal Support and Stress Management subscales, these changes were not statistically significant. Furthermore, this study demonstrated that the students who were attending the Health Promotion courses, high e-health literacy is an important element for the achievement of positive health behaviors. For this reason, we recommend that this course be applied to other nursing schools. According to these results, it is recommended to include information literacy and eHL in nurse training programs, as the ability to search, understand, evaluate, distinguish and interpret high quality information on health-related subjects will be important for both healthcare professionals and the general public in the near future.

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The authors' contributions are: SC and HB conceived the study ideas; SC collected the data; literature research: SC and HB; SC and HB performed statistical analysis; SC and HB wrote the manuscript.

Conflicts of interest

The authors declared they do not have anything to disclose regarding conflict of interest with respect to this manuscript.

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