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Factors Influencing Skin Cancer Preventive Behaviors Based on the Extended Parallel Process Model in Yazd University of Medical Sciences Students, 2017

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ABSTRACT

Background: Skin cancer is one of the most common cancers that is mostly caused by ultraviolet radiation. The aim of this study was to investigate the factors affecting skin cancer preventive behaviors in medical sciences students based on the extended parallel process model that is responsible for the future health of the community.

Methods: This descriptive cross-sectional study was carried out among 150 students who were selected by the simple random sampling method in Yazd in 2017. The data were collected by translating the questionnaire based on the extended parallel process model. The data were analyzed by SPSS-18 software and descriptive tests and non-parametric Mann-Whitney, Kruskal-Wallis tests, Spearman correlation and linear regression at a significance level of 0.05.

Results: The mean(SD) age of participants was 22.01 (5.24), more than half of whom (57.3%) used sunscreen as a self-protective behavior against the sunlight. The perceived severity construct had the highest score among the constructs (79.53) and preventive behaviors score (61.7). Among the demographic variables, gender had a significant statistical difference with the constructs of fear and behavioral intention, and preventive behaviors and economic status variable in the perceived response efficacy construct. Among the model constructs, the behavioral intention was the strongest behavioral predictor of skin cancer prevention ($p< 0.000, \beta =0.589$).

Conclusion: In view of the findings, it seems necessary to increase protective behaviors against sunlight and skin cancer prevention by removing existing barriers including cultural issues. Also, recurrent training can be effective in promoting behavioral intention of student in preventing skin cancer.

Keywords: Skin Cancer, Self-care, Self-efficacy, Students, Extended parallel process model

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Introduction

Cancer, after cardiovascular diseases and accidents, is the third cause of world mortality statistics (1, 2). Skin cancer is one of the common cancers in the world, especially among white people (3). Cancer which is the most common human malignancy is primarily diagnosed visually (4). Many of 5 million skin cancer cases that are diagnosed annually could be prevented by protecting skin from excessive sun exposure (5).

In recent years, there has been a dramatic increase in the global outbreak of skin cancer. According to predictions, this disease will be a major contributor to the global burden of diseases in the coming decades (6). It is estimated that the incidence of various cancers in the world will increase to 20 million in 2020 (1, 7). In the United States, 2 million people are annually affected by skin cancer, and more than 50,000 die in the country due to the disease. Australia has the highest rate of skin cancer in the world (8). The highest incidence of skin cancers in both genders is seen in the face, which is indicative of the relationship between contacting with sun rays and various types of skin cancers. Epidemiologically, the most important risk factor for increasing all skin cancers is ultraviolet radiation (UV), either with a solar or synthetic source. Therefore, 90% of skin cancers are attributed to sunlight. However, atmospheric changes, including changes in the thickness of the ozone layer, along with changes in individual and social habits can justify this increase (1, 7).

The most common cancer in the Middle East (9) and the United States is skin cancer (10)which has been the most commonly reported cancer in Iran in the recent years according to recent reports of cancer registries by Iranian Ministry of Health and Medical Education. Studies in Iran show a high incidence of this cancer with a rate of 16.51 (11). Currently, cancer in Yazd is the third most common cause of death and in terms of organ involvement, skin cancer is the second-largest common cancer in women (13.6% of all cancers) of the province (12). Totally, 20% of all types of cancer in Yazd are related to skin cancer. In the studies conducted by Nourbala et al. during the last fifteen years in Yazd, the frequency of skin cancers has been reported to be up to 28% (13).

Skin cancer is one of the most preventable cancers. The important factor in preventing skin cancer is avoiding exposure to ultraviolet radiation (14). Several simple strategies can significantly prevent this disease such as restricting outdoor activities or avoiding exposure to sunlight from 10 am to 4 pm; searching for shadows; especially in the middle of the day; using thick protective clothing when exposing to sunlight; wearing a wide-edged cap as a shadow of face, head, ear, and neck; using sunscreen with SPF 15 or higher, with UVA and UVB shields (wide range); avoiding synthetic UV sources; using protective sunglasses; and avoiding indoor skin tanning (13, 15-17).

One of the health education models is the Extended Parallel Process Model (EPPM) which measures the combination of emotional processes (e.g.; fear) in relation to risk (18). This model is based on the theory of fear motivation (19, 20), which was introduced by Kim Witt in 1992. Based on this model, if people believe that they are highly at risk of developing a disease or exposure to a health hazard, more will be exacerbated to counteract it, and then an effective assessment of remedies will begin. In the event of a threat assessment followed by an assessment of strategies effectiveness, the likelihood of changing attitudes, behavioral intent and behavior will be greater (21, 22).

Considering the high prevalence of this disease as well as its mortality, and in addition, the impact of the disease on the individual's useful life years and the created emotional and physical suffering, prevention of this disease seems to be essential (11). Given that medical students are responsible for this education to the community, it seems that, if they themselves adhere to skin cancer prevention, they can establish community relevance and be successful in community education. Therefore, this study aimed to investigate the factors affecting skin cancer prevention in medical students of Yazd.

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Methods

This descriptive cross-sectional study was conducted in 2017. The population of this study was Yazd School of Public Health students. The sample size was estimated to about 150 people using Cochran formula with a 95% confidence interval and accuracy of 0.05 and by simple random sampling. Furthermore, data collection was conducted among students who were available at the faculty.

In this study, the questionnaire in the study by Kim Wit (Skin cancer questionnaire) was used (23) which consisted of two parts. The primary part was demographic variables including age, gender, marital status, economic status, et.al, the second part was based on the model of parallel processes developed in the field of skin cancer, which was translated by the designer of this model and was approved by the professors in this field. The face validity of the scales was approved by a panel of experts and the internal consistency of the scale was measured in a pilot study by 25 eligible participants. The sample subscales model questionnaire and the Cronbach α calculated 0.85. The questions in this questionnaire included "fear" with a score range of 36-6 which were measured as 6-level Likert options (option never = 1 to very much = 6) and Other constructs including "perceived sensitivity" 3-15, "perceived severity" 3-15, "perceived self-efficacy" 9-45, "defense avoidance" 4-20, " perceived response efficacy " 8-40, "behavioral intention" 15-75, "preventive behavior" 2-10 were measured as 5-level Likert options (completely opposite = 1 to totally agree = 5). Before collecting data, samples were entered into the study with justification and satisfaction. The collected data after coding were analyzed using SPSS-18 software and due to the abnormality of the data using the Kolmogorov-Smirnov test of appropriate nonparametric statistical tests including Mann-Whitney, Kruskal-Wallis, Spearman correlation and linear regression analyses were done at the significance level of less than 0.05.

Results

The mean (SD) age of the participants was 22.01 (5.24), 88 people (58.7) were women and 59 people (39.3) were men, and 116 people were single (77.3%) and 30 married (20.0%). Moreover, most of the students (90.7%) were living in the urban area, and their entering year to the university varied from years 2010 to 2017, that the most frequency (35.4%) was for the year 2016. Furthermore, most of them (63.3%) reported that they have an average economic status. According to the target group self-report, hats (28.7%) and sunscreen (57.3%) were used as self-care behaviors.

Table 1 indicates that the perceived severity construct with 79.53% of the maximum score has the highest score. The defense avoidance construct also achieved the highest score of 48.2% of the maximum score among the studied constructs (Table 1).

According to the results of Table 2 based on the Mann-Whitney U test, there was a significant relationship between the fears, behavioral intention and preventive behaviors with the dual-gender variable. For other binary and MULTILEVEL background variables, the same test and Kruskal-Wallis test were used which showed no significant difference (Table 2).

The Spearman correlation test showed that there was a significant relationship between model constructs with a quantitative variable of age, in defense avoidance constructs, perceived self-efficacy, perceived response efficacy, behavioral intention, and preventive behaviors. According to the results of this test, there was a positive correlation between fear and perceived sensitivity ($p = 0.02$), perceived severity and perceived sensitivity ($p = 0.037$), perceived response efficacy and perceived self-efficacy ($p = 0.011$), and also between behavioral intention and respectively perceived fear constructs ($p = 0.002$), perceived severity ($p = 0.003$), perceived self-efficacy ($p = 0.000$), perceived response efficacy ($p = 0.000$). Finally, the mean of preventive behavior score with model constructs showed that there was a significant positive correlation between behavior and perceived self-efficacy ($p = 0.000$), perceived response efficacy ($p = 0.036$) and behavioral intention ($p = 0.000$) (Table 3).

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According to the results, perceived severity constructs, perceived self-efficacy, perceived response efficacy, and behavioral intention predicted 0.53% of the preventive behaviors variance ($p<0.001$, $\beta=0.589$) among which behavioral intention was the strongest predictor (Table 4).

Table 1. Means, standard deviation, average percentage of the score obtained from the maximum achievable score and the achievable score range of EPPM model constructs

Variable	Mean	SD	Average percentage of the maximum	Achievable score range
Fear	19.44	6.46	54	6-36
Perceived sensitivity	8.96	2.81	59.73	3-15
Perceived severity	11.93	2.52	79.53	3-15
Perceived self-efficacy	28.98	5.42	64.4	9-45
Defense avoidance	9.64	3.06	48.2	4-20
Perceived response Efficacy	31.27	4.81	78.17	8-40
Behavioral intention	51.56	10.55	68.74	15-75
Preventive behavior	6.17	1.90	61.7	2-10

Table 2. Mean and standard deviation of the EPPM constructs scores with demographic characteristics of the subjects

Demographic variable	Gender										Mann-) (Whitney U
	Female					Male					
Model constructs	mean	SD	Median	Q1	Q3	mean	SD	Median	Q1	Q3	
fear	21.07	5.67	20	18	25	17.23	7.00	17	15	21	p=0.002
Behavioral intention	54.07	9.10	55	48	60	48.46	10.93	50	40	56	p=0.006
Preventive behaviors	6.52	1.82	6	6	8	5.71	1.96	5	4	7	p=0.016

Table 3. Correlation coefficient between constructs of EPPM model in the studied subjects

Items	1	2	3	4	5	6	7	8	9
Fear	1								
Perceived sensitivity	r=0.193* p= 0.020	1							
Perceived severity	r=0.132 p= 0.115	r=0.171* p= 0.037	1						
Perceived self-efficacy	r=0.056 p= 0.510	r=-0.150 p= 0.071	r=0.121 p= 0.146	1					
Defense avoidance	r=0.039 p= 0.667	r=0.109 p= 0.227	r=-0.109 p= 0.228	r=0.087 p= 0.337	1				
perceived response Efficacy	r=-0.002* p= 0.985	r=0.087 p= 0.301	r=0.085 p= 0.313	r=0.216* p= 0.011	r=0.050 p= 0.592	1			
Behavioral intention	r=0.256* p= 0.002	r=0.066 p= 0.432	r=0.250** p= 0.003	r=0.546** p= 0.000	r=0.113 p= 0.224	r=0.450** p= 0.000	1		
Preventive behavior	r=0.146 P=0.083	r=-0.005 p= 0.946	r=0.129 p= 0.118	r=0.553** p= 0.000	r=0.055 p= 0.546	r=0.177* p= 0.036	r=0.619** p= 0.000	1	
Age	r=-0.092 p= 0.276	r=0.007 p= 0.931	r=-0.124 p= 0.137	r=0.061 p= 0.466	r=0.178* p= 0.049	r=0.285** p= 0.001	r=0.219** p= 0.010	r=0.259** p= 0.002	1

P*<0/05
P**<0/01

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Table 4. Regression analysis of constructs of EPPM model as skin cancer behavior predictors

Independent variables	Beta Standardized	p	R2	Dependent variable
Perceived severity	0.186	0.012	0.535	Preventive behavior
perceived self-efficacy	0.328	<0.001		
perceived response Efficacy	0.248	0.002		
Behavioral intention	0.589	<0.001		

Discussion

This study aimed to investigate the factors affecting skin cancer preventive behaviors in university students. According to the results, the most protective device for individuals was sunscreen, which was compatible with the study by Mohammadi et al. (24) and Devati et al.(25), similar to that of Lowe et al. in similar teenagers (26). The frequency of using sunscreen was 57.3%; however, in a study in high school students of Tehran, the frequency was 24.7% (25). Furthermore, Benvenuto-Andrade et al. reported the use of sunscreen in their study 47% in the summer and 3% in the winter (27), which are less than the present study. It should be emphasized that permanent use of sunscreen causes protection.

The use of hats as a protective device and self-care behavior in various studies has been reported more than the current study (28, 29). One of the main possible reasons is the cultural issues as the obstacles in using hats in the country. De Vries et al. reported more sunscreen use in the study of beliefs and behavior of Dutch teenagers in protection against the sunlight (30).

The perceived severity mean has the highest score among the constructs which indicates the seriousness of the disease from the students' viewpoint. However, they did not have a good sensitivity to the average score, which could be due to the fact that they do not see themselves at risk of illness, which is similar to the study of Allah Verdipour et al. in the field of narcotics in students (31). The defense avoidance construct has also the lowest score by gaining 48.2% of the maximum acquirable score which can be concluded that despite low sensitivity, the risk control process is high due to its high self-efficacy and its relationship with behavior.

The results showed that there was a significant difference in the background variables of gender in relation to model constructs and self-care behaviors in the construct of fear and behavioral intention and preventive behaviors which in these three items the average score of girls was higher. In a study by De Vries et al., the protection method against sunlight was more common in girls (30). Furthermore, according to the study by Savona et al., they investigated the UV radiation and the skin cancer risk in the behavior of Danish and American teenagers and found that they were more likely to participate in the skin tanning program by sleeping in the sun (32).

Using a correlation test between the background age and behavior variables, a positive correlation was observed, which was not compatible with the previous study by Lowe et al. on Australian elementary school students (26). This difference in results according to the age group and level of education is justified since the target group of the current study consisted of university students who due to their age and attention to appearance have more caring behaviors.

Furthermore, the results of the positive correlation of perceived sensitivity and severity and the subject matter have a supporting role in increasing preventive behaviors, although this relationship with the desired behavior does not have the necessary correlation. Since individuals see themselves more vulnerable to sun damages and related diseases including skin cancer, they are more inclined toward caring behaviors. Moreover, the role of perceived susceptibility was not limited to direct effects but involved mediating pathways of influence (33).However, in a study by Novak et al. in patients with skin melanoma, many of them did not follow caring behaviors with regard to the risk of cancer, which researchers proposed a more comprehensive study in this regard (34).

In this study, there was a positive correlation between perceived self-efficacy and perceived

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response efficacy. In other words, if people believe that the result of the behavior is positive, they will have higher self-efficacy in doing the behavior; however, when there is a negative perception of the behavior outcome, the result will be different. In Reinau's study, sunscreen was the main form of sun protection (95% ≤), and shading and wearing clothes were rarely used as protective devices (35).

There was a positive correlation between perceived self-efficacy and behavior which is similar to the study by Najafi et al. on skin cancer among Sanandaj students (36). According to the definition of self-efficacy, it can be argued that if people have the ability to do an activity, then doing the behavior will be easy.

Regarding the positive correlation between behavioral intention and preventive behaviors, it is indicated that the person's intention for behavior is related to its occurrence in the future which is compatible with the study by Mohammadi et al. (24).

In the present study, the behavioral intention construct was the strongest predictor of behavior. However, in a study by Mohammadi et al. in the field of skin cancer, self-efficacy had the most predictive power of protection motivation (24), and in Heckman's study, self-efficacy also predicted the protective behavior, but was not a strong predictor (37). The intention is the preoperative stage in which the person is prepared for the behavior; however, it does not always lead to behavior, since various factors can change the person's intention to do a behavior.

Conclusions

According to the results of this study, the use of protective devices is related to several factors including culture, which may consider sunscreen for women or as a cosmetic tool or using hats as an unconventional way of protection. Therefore, it prevents preventive behaviors in skin cancer which shows the need to educate students in this regard in order to promote protective behaviors. It seems necessary to plan programs in order to increase protective behaviors against sunlight and skin cancer prevention by removing existing barriers including cultural issues. Also, recurrent training can be effective in promoting behavioral intention of student in preventing skin cancer.

The limitation of the study was individuals' self-reporting that could be detrimental to the study results. Although it was tried to reduce the deficiencies with a full description of the research issue, it is recommended to examine the participants' behavior by observation and trial or ask them to register their protective behaviors throughout the day in future studies. , This study is was conducted in a limited scope of the University of Medical Sciences (School of Public Health); therefore, extensive research in other academic environments is needed.

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Ethical approval

The purpose of the study and the way to complete the questionnaire were explained to the participants. Moreover, the participants were reassured of confidentiality and signed the informed consent form. Ethical code:IR.SSU.SPH.REC.1398.007

Conflict of interest

The authors declare that they have no conflicts of interest.

References

1. Babazadeh T, Nadrian H, Banayejeddi M, et al. Determinants of skin cancer preventive behaviors among rural farmers in Iran: an application of protection motivation theory. Journal of Cancer Education. 2017;32(3):604-12.
2. Al-Dujaili Z, Henry M, Dorizas A, et al. Skin cancer concerns particular to women. International journal of women's dermatology. 2017;3(1):S49-S51.

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[DOR: 20.1001.1.23225688.2019.8.3.2.1]
[DOI: 10.18502/jchr.v8i3.1563]

3. Alberg AJ, Herbst RM, Genkinger JM,et al. Knowledge, attitudes, and behaviors toward skin cancer in Maryland youths. Journal of Adolescent Health. 2002;31(4):372-7.
4. Esteva A, Kuprel B, Novoa RA, et al. Dermatologist-level classification of skin cancer with deep neural networks. Nature. 2017;542(7639):115-8.
5. Segal R, Miller K, Jemal A. Cancer statistics, 2018. CA Cancer J Clin. 2018;68(1):7-30.
6. Janda M, Youl P, Marshall AL ,et al. The HealthyTexts study: A randomized controlled trial to improve skin cancer prevention behaviors among young people. Contemporary clinical trials. 2013;35(1):159-67.
7. Livingston PM, White V, Hayman J, et al. Australian adolescents' sun protection behavior: Who are we kidding? Preventive medicine. 2007;44(6):508-12.
8. Kim RH, Armstrong AW. Nonmelanoma skin cancer. Dermatologic clinics. 2012;30(1):125-39.
9. Mohebbipour A, F. A. Prevalence of melanoma and nonmelanoma malignancies in patients visiting dermatology clinics in Ardabil City, 2002-2013. International Journal of Advances in Medicine. 2015;2(1):38-43. [Persian]
10. Guy Jr GP, Thomas CC, Thompson T, et al. Vital signs: melanoma incidence and mortality trends and projections—United States, 1982–2030. MMWR Morbidity and mortality weekly report. 2015;64(21):591-96.
11. Afshari M, Bahrami M, Kangavari M. Factors preventing skin cancer in farmers from tuyserkan city based on protection motivation theory. Iran Occupational Health. 2016;13(1):80-90. [Persian]
12. Noorbala MT, Kafaie P. Analysis of 15 years of skin cancer in central Iran (Yazd). Dermatology online journal. 2007;13(4):1-4.
13. Nadrian H, Rahaee Z, Mazloomy Mahmoodabad SS, et al. Effects of educational intervention on promoting skin cancer preventive behaviors and its predisposing factors among female students in Yazd city: An application of some PRECEDE Model constructs. Razi Journal of Medical Sciences. 2014;21(126):55-64. [Persian]
14. Geller AC, Swetter SM, Brooks K, et al. Screening, early detection, and trends for melanoma: current status (2000-2006) and future directions. Journal of the American Academy of Dermatology. 2007;57(4):555-72.
15. Sandhu PK, Elder R, Patel M, et al. Community-wide interventions to prevent skin cancer: two community guide systematic reviews. American journal of preventive medicine. 2016;51(4):531-9.
16. Boniol M, Autier P, Boyle P, et al. Cutaneous melanoma attributable to sunbed use: systematic review and meta-analysis. Bmj. 2012;345:e4757.
17. MahmoodAbad SSM, Noorbala MT, Mohammadi M, et al. Knowledge, attitude, and performance of students toward skin cancer in Yazd, 2009. International journal of dermatology. 2011;50(10):1262-5.
18. Birmingham WC, Hung M, Boonyasiriwat W, et al. Effectiveness of the extended parallel process model in promoting colorectal cancer screening. Psycho Oncology. 2015;24(10):1265-78.
19. Witte K. Fear as motivator, fear as inhibitor: Using the extended parallel process model to explain fear appeal successes and failures. InHandbook of communication and emotion 1996: 423-450. Academic Press.
20. Basil M, Basil D, Deshpande S, et al. Applying the Extended Parallel Process Model to workplace safety messages. Health communication. 2013;28(1):29-39.
21. Jasemzadeh M, Jaafarzadeh N, Khafaie MA, et al. Predicator of pregnant women's self-care behavior against air pollution: an explanation based on the extended parallel process model (EPPM). Electronic physician. 2016;8(9):2871.
22. Jin SS, Kai B, Chen FF, et al. Correlates of condom-use self-efficacy on the EPPM-based integrated model among Chinese college students. Biomedical and Environmental Sciences. 2017;30(2):97-105.
23. https://msu.edu/~wittek/scale.htm.
24. Mohammadi S, Baghiani Moghadam MH, Noorbala MT, et al. Survey about the role of appearance concern with skin cancer prevention behavior based on protection motivation theory. Journal of Dermatology and Cosmetic. 2010;1(2):70-7. [Persian]
25. Davati A, Pirasteh A, Yahyaei M, et al. Skin protective behavior amongst girl students; based on health belief model. Acta Medica Iranica. 2013:626-32.
26. Lowe JB, Borland R, Stanton WR, et al. Sun-safe behaviour among secondary school students in Australia. Health Education Research. 2000;15(3):271-81.
27. Benvenuto-Andrade C, Zen B, Fonseca G, et al. Sun Exposure and Sun Protection Habits Among High-school Adolescents in Porto Alegre, Brazil¶. Photochemistry and photobiology. 2005;81(3):630-5.

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[DOR: 20.1001.1.23225688.2019.8.3.2.1]
[DOI: 10.18502/jchr.v8i3.1563]

28. Dalli D, Ogce F, Okcin FA. Knowledge of the effects of sun exposure of Turkish high school students and their sun bathing habits. Asian Pacific Journal of Cancer Prevention. 2004;5(4):366-9.
29. Aquilina S, Gauci AA, Ellul M, et al. Sun awareness in Maltese secondary school students. Journal of the European Academy of Dermatology and Venereology. 2004;18(6):670-5.
30. De Vries H, Lezwijn J, Hol M, et al. Skin cancer prevention: behaviour and motives of Dutch adolescents. European Journal of Cancer Prevention. 2005;14(1):39-50.
31. Allahverdipour H, Hidarnia A, Kazemnejad A, et al. Assessment of substance abuse behaviors in adolescents': integration of self-control into extended parallel process model. SSU_Journals. 2005;13(1):21-31. [Persian]
32. Savona M, Jacobsen M, James R, et al. Ultraviolet radiation and the risks of cutaneous malignant melanoma and non-melanoma skin cancer: perceptions and behaviours of Danish and American adolescents. European Journal of Cancer Prevention. 2005;14(1):57-62.
33. McQueen A, Vernon SW, Rothman AJ, et al. Examining the role of perceived susceptibility on colorectal cancer screening intention and behavior. Annals of Behavioral Medicine. 2010;40(2):205-17.
34. Novak CB, Young DS, Lipa JE, et al. Evaluation of sun protection behaviour in patients following excision of a skin lesion. Canadian Journal of Plastic Surgery. 2007;15(1):38-40.
35. Reinau D, Meier C, Gerber N, et al. Sun protective behaviour of primary and secondary school students in North-Western Switzerland. Swiss medical weekly. 2012;142(w13520).
36. Najafi A, Nadrian E, Bakri G, et al. Skin cancer preventive behaviors and its determinants among high school students in Sanandaj, Iran: an application of PRECEDE model. J Educ Community Health. 2017;4(1):1-11. [Persian]
37. Heckman CJ, Manne SL, Kloss JD, et al. Beliefs and intentions for skin protection and UV exposure in young adults. American journal of health behavior. 2011;35(6):699-711.

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