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Effect of Pender's Model-Based Educational Intervention Program on Promoting Healthy Lifestyle Practices among University Nursing Students

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ABSTRACT

Background: University nursing students are in a situation of affairs in which their households have fulfilled their essential interests. As a college student, those younger humans will go away from their home for impartial life. **Aim:** To evaluate the effect of Pender's model-based educational intervention program on promoting healthy lifestyle practices among university nursing students. **Methodology:** Quasi-experimental design was applied in the research; it was conducted at the Faculty of Nursing, Tanta University, and El-Gharbeya Governorate. Two tools were used for data collection. **Results:** there were a statistically significant relations between all items of socio demographic criteria of the studied nurses and occurrence of COVID-19 reinfection where P<0.001 except their residence, marital status, and department items. **Conclusion:** The educational program based on Pender's model was effective in improving the adherence level to healthy lifestyle practices among studied students through the study stages. **Recommendations:** Lectures, workshops, and campaigns with periodic refreshment in service training should be regularly organized to empowering undergraduate students in different faculties in order to equip them with adequate knowledge on health promotion lifestyles behaviors.

Keywords: University Students, Pender's Model &Health Promoting Lifestyle.

Introduction

According to the World Health Organization (WHO), 70–80% of deaths in developed countries and 40–50% of deaths in developing countries are related to diseases associated with lifestyle. Non-communicable diseases (NCDs) associated with lifestyles lie at the root of seven out of 10 deaths in developing countries. On contrary, incorporating health promoting behaviors (HPBs) into an individual's lifestyle can improve health and prevent the occurrence of chronic NCDs, which are the main cause of mortality and morbidity worldwide. (WHO, 2020)

Health promotion is "a dynamic process of enabling a person to increase control over and promote their lives". Health-promoting lifestyle behaviors are "a multidimensional pattern of acts and attitudes that people follow in order to enhance the level of wellness, self-actualization and prevention of diseases. It`s focused on nutrition, the ability to express one's personality in social environments, physical activity, personalized assistance, and stress management. To improve health, it is necessary for each person in the community must take responsibility as the healthy life model is a part of their daily routine (Peltzer et al., 2020 & Carl et al., 2020).

According to WHO, (2020) there are more adolescents (aged 10-19) in the world than before: 1.2billion, totaling one six of the worldwide population.

This number is expected to increase through 2050, especially in low and middle income countries. Also adolescents (aged 10-19) together with youth in the age group 20-24 years constitute one third of Egypt population (WHO, 2020). The adolescent stage is described as transitional a period associated with rapid physiologic and cognitive development changes. In addition; lifestyle-related illness such as diabetes and chronic diseases are becoming more prevalent particularly in teenage and the main risk factors for these diseases are related to unhealthy lifestyle choices. So, adolescent period acts decisive challenges in the healthcare system as they begin the transition process of parent-managed healthcare to personal responsibility for health behavior (Hurrelman, 2019; Fleary, 2018).

The creation, maintenance, and improvement of Healthy Lifestyle Practices (HLBs), as well as the complex nature of these behaviors require that behavior change theories or models to be used to identify the factors influencing the concerned behavior. One of the most comprehensive and predictive models used as a guide for promoting healthy lifestyle practices among university nursing students is Pender's health promotion model (HPM). Students at universities make up a sizable portion of the youthful population. Therefore, many effects of health-risk factors are avoidable in adults if these habits are discovered and corrected at the beginning. Students at universities make up a sizable portion of the youthful population (Borle, 2017 and Fleary, 2018).

Health-promoting behavior is an important topic in nursing activities, as the majority of nursing interventions are based on health education. Caregivers are often considered role models for healthy living and leading communities in organizing efforts to promote health. Nurses role to motivate client to adhere healthy lifestyles, because today's nursing students will become tomorrow's health care providers (Edelman C, 2017).

Significance of the study; Pender's Health Promotion Model (HPM) (first formulated in 1982 and then revised in 1996) is an explanatory model of fitness conduct that emphasizes the function of expectancies within side the shaping of conduct . The extra person's self-efficacy or perceived competence for a conduct, the much more likely the person will decide to movement and in reality perform this conduct. HPM permits nurses to explore "the complicated bio-psychosocial acts inspire people to have interactions in behaviors in the direction of enhancement of health". (Darch, 2017 & Khodaveisi, 2020)

The HPM become broadly mounted within side the nursing network and become carried out in nursing practice, education, and research. In addition, the HPM constructs has been used to hypothesize conceptual frameworks in lots of research to expect fitness-selling behaviors in lots of persistent diseases. Pender's Health Promotion Model (HPM) is a theoretical comprehensive model that focused on the promotion of health and individual empowerment for better health and illness prevention through practices changes. The HPM is focused on social cognitive theory; which contained on cognitive-perceptual elements (perceived benefits, barriers, and self-efficacy) and modifying factors (demographic features, interpersonal influences, and behavioral factors) that are considered to interact with each other to influence cognitive perceptual processes. The model can be used to promote lifestyle practices among undergraduate nursing students. (Aqtam I, 2018)

Community health nurses have a vital role in influencing knowledge, attitudes, and behaviors of the community related to health promotion and disease prevention through their important role as health

planners, evaluators, counselors, and educators by taking an active role in the planning, implementation, and evaluation of comprehensive educational programs depended on a theoretical framework to improving the health of society, motivating them, and removing barriers to health promotion adherence. Also, discovering unhealthy habits and modifying them through nursing care plan (Walker, 1987). So, this research aimed to evaluate an effect of Pender's model-based educational intervention program on promoting healthy lifestyle practices among university nursing students.

Research Aim

To evaluate an effect of Pender's model-based educational intervention program on promoting healthy lifestyle practices among university nursing students.

Research hypothesis

The adherence level to HLBs among the studied nursing students will exhibit an improvement based on Pender's model after implementation of the health education program

Subjects and Method

Research design: A quasi-experimental design was applied to achieve the purpose of this research.

Research setting: This research was conducted at the Faculty of Nursing, Tanta University, El-Gharbeya Governorate-Egypt.

Research subjects: The research subjects were nursing students in faculty of nursing, Tanta University during the academic year 2020-2021. The total number of the research subjects was 500 students, 310 females and 190 males. Their ages ranged between 18 to 24 years.

Research Sampling:

The equal proportional stratified random sample technique was used in the selection of this study sample of nursing students. 30% of each stratum (grade) was chosen randomly. A total sample of 500 students from both sexes was chosen randomly from a total number of the four grades students equal (1665) as follows: 150 students from grade one, 132 students from grade two, 119 students from grade three, and 99 students from grade four.

Inclusive criteria for selecting the sample; students free from chronic diseases and were interested in participation in the research, a student appeared good health and their age not increased than 24 years.

Research tools: -

Following a literature review, two tools were utilized to gather data based on Pender's health promotion model among the studied students.

Tool I:-Structured questionnaire schedule: consisted of two parts

Part I: Socio-demographic and characteristics of the students' families; it prepared by the researcher post literature review and it included questions about age, sex, residence, marital status, religious, birth order, number of family members, house room's number, having a specific room, the family type, family income, student parent's level of education & occupation, genetic diseases in the family, health history of the studied students and etc.

Part II: Health promoting lifestyle profile II (HPLPII) (Walker, 1987)

This tool was designed by Walker et al., 1987 to measure health promoting lifestyle behaviors (HPLBs). It included fifty two elements within six dimensions: "Physical activity, nutrition, spiritual growth, interpersonal relations, stress management, and health responsibility". Higher scores refer to higher adherence levels to healthier lifestyle behaviors. The total score

ranged from (52 to 208). It used "a four-point likert scale", ranged from one (never) to four (routinely). The total score was classified into three levels; low level of adherence to HPLP (30% < 60%), moderate level of adherence to HPLP (60%< 80%), high level of adherence to HPLP (80%-100%). The reliability of HPLP II tool was 0.939 for the total scale.

Tool (II): Pender's determinants of healthy behaviors among the studied students (Pender N , 2011; Sriyuktasu et al., 2018)

This questionnaire was prepared by the researchers after a literature review based on the Pender's model constructs, It consists of fifty six items divided into (perceived benefits, perceived barriers, perceived self-efficacy, and behavior-related affect, interpersonal influences, situational influences and commitment to action with five-point likert scale ranging from disagree= one to strongly agree = five, except for the perceived barriers. Where the score of its items was reversed. The total score is classified into two levels as follows; good belief: ≥ 60 % of the total score, bad belief: 50% -< 60 % of the total score.

Method

1- Official approval from the dean of faculty of nursing was obtained to conduct the research through official letter.

2- Ethical considerations:

- Informed consent was obtained from the students after show the study aim, giving them the permission to withdraw from the study at any stage, privacy and confidentiality of the data collected was ensured and nature of the study was not causing any harm and /or pain for the student.

3-Developing the tools:-

- Structured questionnaire sheet was developed based on Pender model. Tools were tested before conducting the study for their validity either face and content by a Jury of five experts in public health and community health nursing field. Also, tools of study were computed for their reliability by using Cronbach's alpha test, which was found to be (0.915) for all the study tools.

4- The pilot study:-

- Pilot research was done upon 50 nursing students from four academic years to assess clarity, applicability of the tool and to determine the period needed to collect the data from each student. Those students were excluded from original sample. The studied students were interviewed in the faculty according to the schedule of their lectures and sessions. The necessary changes were made in accordance with the results of the pilot study.

5- Developing educational intervention program.

- The program was performed by the researcher through the following phases.

I- Preparation and assessment phase;

The program was carried out by the researchers to ensure providing complete, consistent and accurate knowledge about promoting healthy lifestyle practices, developing the audiovisual materials used in this study included the booklet, brochures, and power point slides based on literature review. The data was collected by the previously mentioned tools through interviewing the students in their faculty to collect the baseline data as a pre-intervention assessment. This phase was considered the basis for evaluating the educational program (pretest).

II- Planning phase;

After identifying the needs of students in the phase of assessment and related literature review, researchers planned a nursing educational program about promoting healthy lifestyle behaviors based on Pender's model by determining the aims and specific objectives of the program and designing program content depended on the data obtained from the questionnaire sheet, as well as literature review. The program was divided into eight sessions, the average time of each session was 60 min. PowerPoint, videos, posters, pictures, and a guiding booklet were used as a teaching material. Lecture, brain storming, and discussion were used as teaching strategies.

III- Implementation phases:

The e actual study was done during the period from October 2020 to March 2021. Each nurse of the studied sample was first informed about the program objectives, as well as the time schedule in order to obtain their active participation and cooperation during implementation of the program. Then pretest for each nurse in the study group was done (one hour each session per day). The studied students were interviewed in the faculty according to the schedule of their lectures and sessions after they had finished their lectures. Duration of each session was about 45-60 minutes. Booklets were distributed to the studied sample at the end of the sessions to refresh their knowledge, and the power point was presented during each session as needed.

IV- Evaluation phase:

This evaluation was conducted on the studied students two times:

First time (pre-test): before the health education implementation using two tools for subjects. Second time: (post-test): three months after health education implementation using tool I Part 2 and tool II.

V-Out come phase;

The research hypotheses is accepted in which the adherence level to HLBs among the studied nursing students improved after implementation of the health education program based on Pender's model.

Statistical analysis:

Data was processed, tabulated, and statistically examined by the statistical package for Social Sciences (SPSS) version 20.The range, mean, and standard deviations of numerical values were computed. The T-test was performed to compare two means. Relations between more than two means were tested by (F) analysis of variance. For qualitative variables, the number and percentage were determined, and chi square was used to test for differences across subcategories (X2). Fisher and Monte Carlo exact tests were utilized when chi square was not applicable. The significance level was p value <0.05.

Results

Table (1): Represents the distribution of the study participants regarding socio-demographic and family characteristics of the studied participants. The table shows that the studied students' aging ranged from 18 -24 years with a mean value of 20.24±1.85 years. Regarding the gender; more than half of the studied students (62.0%) were females, the majority of them (96.0% and 82.2 %) were single and from rural areas respectively. Also, more than two-thirds (74.4% and 89.0%) of the studied students were lived with their families, their family income was enough and the crowding index of them ranged from 0.6-7 index with a mean 1.71±0.60 index. Concerning father's educational level; more than one third (36.8% and 34.2%) of their fathers were secondary and university or postgraduate educated respectively. The majority (96.6%) of their fathers were worked. Concerning mothers' educational level; more than one-third (43.2%) of them were

university educated and about two-third (60%) of them were housewives/retired.

Table (2): Distribution of the study participants' levels of adherence to healthy living behaviors before and post-program intervention after 3months. The table illustrated that; there was a highly significant difference among the studied participants in all health promoting lifestyles dimensions pre, and post-program intervention after 3 months (P=0.000).

Table (3): Distribution of the participants regarding Pender's determinants, the total score of healthy behaviors throughout the study phases. The table shows that; there was a highly statistical significant difference among the studied students in all Pender's determinants score regarding healthy behaviors before and after three months post-program intervention.

Table (4): Correlation between a total score of lifestyles and Pender determinants among study participants before and three months post-program intervention. The table shows that, a significant positive correlation was presented between a total health promoting lifestyles score of the studied students and their total Pender's determinants of healthy behaviors score before and 3 months post-program intervention as P< 0.05.

Table (5): The Correlation between socio-demographic characteristics and the total lifestyles and Pender determinants score of studied students among the study phases. It was observed that, a significant positive correlation between gender, academic year, father occupation of the studied students and their total Pender's determinants of healthy behaviors score three months post- program intervention. Also, there was a statistically significant correlation between sex, academic year, type of family and father occupation of studied students and their health promoting lifestyles score three months post- program intervention as (P< 0.05).

Table(1): Distribution of the study participants regarding socio- demographic and their families.

Variables	Number (n=500)	%
Age in years:		
Range	18-24	
Mean± SD	20.24±1.85	
Gender:		
Males	190	38.0
Females	310	62.0
Marital status:		
Single	480	96.0
Married	20	4.0
Residence:		
Rural	411	82.2
Urban	89	17.8
Living with:		
Parents	372	74.4
university hostels	37	7.4
with relatives	91	18.2
Monthly income:		
Enough	445	89.0
Not enough	22	11.0
Crowding index		
Range	0.6-7	
Mean± SD	1.71±0.60	
Fathers' education:		
Illiterate	82	16.4
Basic education	63	12.6
Secondary Education	171	34.2
College education or more	184	36.8
Mothers' education:		
Illiterate or read and write	85	19.4
Basic education	67	15.2
Secondary Education	97	22.1
College education or postgraduate	189	43.2
Fathers' occupation:		
Worked	483	96.6
Not worked /retired	17	3.4
Mothers' education:		
Housewife /retired	300	60
Worked	200	40

Table (2): Distribution of the study participants' levels of adherence to healthy living behaviors before and post-program intervention after 3months.

Health promoting lifestyles items	The studied women (No=500)				X2	P
	Pre-intervention		Three months Post			
Nutrition						
Low	373	74.6	8	1.6	383.18	.000*
Moderate	62	12.4	0	0		
High	65	13.0	492	98.4		
Physical activity						
Low	399	79.8	101	20.2	692.00	.000*
Moderate	48	9.6	0	0		
High	53	10.6	399	79.8		
Health responsibility						
Low	379	75.8	39	7.8	403.14	.000*
Moderate	44	8.8	26	5.2		
High	77	15.4	435	87.0		
Stress management						
Low	399	79.8	30	6.0	326.32	.000*
Moderate	27	5.4	174	34.8		
High	74	14.8	296	59.2		
Interpersonal relations						
Low	393	78.6	38	7.6	865.26	.000*
Moderate	73	14.6	101	20.2		
High	34	6.8	361	72.2		
Spiritual growth						
Low	409	81.8	5	1.0	865.26	.000*
Moderate	29	5.8	57	11.4		
High	62	12.4	438	87.6		

*Significant P value <0.05

Table (3): Distribution of the study participants regarding Pender's determinants, a total score of the healthy behaviors throughout the study phases.

Pender's determinants score	The studied women (No=500)				X2	P
	Pre-intervention		Three months Post			
Perceived benefits						
Bad	417	83.4	8	1.6	664.29	.000*
Good	83	16.6	492	98.4		
Perceived barriers						
Bad	271	54.2	29	5.8	534.19	.000*
Good	229	45.8	471	94.2		
Perceived interpersonal influences						
Bad	440	88.0	52	10.4	427.65	.000*
Good	60	12.0	448	89.6		
Perceived Self Efficacy						
Bad	467	93.4	57	11.4	376.7	.000*
Good	33	6.6	443	88.6		
Perceived environment						
Bad	431	86.2	15	3.0	465.5	.000*
Good	69	13.8	485	97.0		
Perceived commitment						
Bad	491	98.2	69	13.8	675.1	.000*
Good	9	1.8	431	86.2		
Total score of Pender's determinants						
Bad	215	43.0	19	3.8	769.2	.000*
Good	285	57.0	481	96.2		

*Significant P value < 0.05

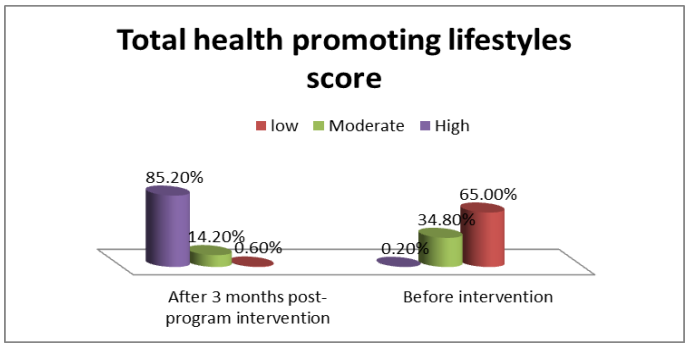

Figure (1): Distribution of the study participants regarding total score of health promoting lifestyles before and 3 months post-program intervention.

Table (4): Correlation between the total score of lifestyles and Pender determinants among the study participants before and post-program intervention with three months.

Total Pender determinants score	Total Lifestyles scores	
	Before intervention	After intervention
	r p	r p
Before intervention	.359 .000**	
After intervention		.140 .002**

**Correlation is highly significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed).

Table (5): Correlation between socio-demographic characteristics and the total lifestyles and Pender determinants score of studied students among the study phases.

Variables	Number (n=500)			
	Total lifestyles score		Total Pender determinants score	
	Before intervention	3 months post	Before intervention	3 months post
	r P	r P	R P	r P
Gender	078 .081	.125 .005*	-.176 .000**	.210 .000**
Academic year	-.083- .063	-.104 .021*	-.098 .029*	.178 .000**
With Who Life	-.088 .048*	-.037- .411	-.249 .000**	-.012- .795
Type of family	.059 .187	.998 .000**	-.215 .000**	.011 .812
Mother Education	-.054- .226	.059 .187	-.173 .000**	.010 .825
Father occupation	-.021- .643	.123 .006**	-.011- .805	.185 .007**

**Correlation is highly significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

Health-promoting lifestyle among adolescents has become a research focus worldwide. Life in college is a transitional period, offering good opportunities for establishing health-promoting lifestyles. Nursing students should participate in health-promoting behaviors for the benefit of their own health as future healthcare professionals (Jamshidi et al., 2016; Hwang, 2020).So the aim of this study was to evaluate an effect of pender's model-based educational intervention program on promoting healthy lifestyle practices among university nursing students.

The current study revealed that the studied participants` age ranged from 18 -24 years with mean 20.24±1.85 years. Regarding the sex; more than half of them were females, the majority of them were single and from rural areas respectively. The majority of them were worked. This finding was in disagreement with Abozeid, et al., (2020) who studied assessment of health promoting life styles practices among faculty of nursing in Egypt that reported that (48.6%) of the mean age of students was 20.8±2.3 years, (95.4%) were single. Moreover, related to academic year (33%) of students were at second year. Also, (69.1% & 55%) of students living with their families and residing in urban areas, respectively, (69.9%) of the studied students were female. (Abozeid et al., 2020).

The current study revealed that also, more than two thirds of the studied students were lived with their families, their family income was enough and the crowding index of them ranged from 0.6-7 index with mean 1.71±0.60. Concerning father's educational level; about one third of them were secondary and university or more education respectively. The majority of them were worked. Concerning mothers educational level; about one third of them were university education and about two third of them were housewives/retired.

This result was in the same line with the research conducted by Abozeid, (2020) who reported that (55.7% & 52.1%) of the student their number of family members was (3-5) and the number of rooms was (3-5), respectively. Regarding to father's education (35.1%) of them had basic education. While, (37.9%) of mother's education had diploma education. Moreover, (62.8%) of students' families income were sufficient from the point of students' view (Abozeid et al., 2020). his results was also congruent with the research achieved by Alzamil, (2019) who studied in the same topic and found that two third of students their family consists of 3-5 individuals, their houses consist of 3-5 rooms and two third of them had sufficient income (Alzamil H, 2019).In the same line Dong, et al., (2009) who studied lifestyles of college students and found that ages of the mean age of studied students in his research were twenty-one years (Dong et al., 2009).

As regards to distribution of the studied under graduates regarding their healthy lifestyle behavior

levels before and three months post-program implementation this study stated that there was a statistically significant difference among the studied participants in all health promoting lifestyles dimensions before, and after post-program intervention with three months (P value equal 0.000). Therefore health responsibility was the highest mean, followed by stress controlling, spiritual growth, physical activity, and interpersonal relations before program intervention. This result within the same line with Abozaid.,(2020) who found that (50%, 49.6% & 43.6%) of scholars had poor scores in nutrition, stress management and physical activity respectively. (Abozeid et al., 2020) In this study, just 23.4 percent of male students and 6.4 percent of female students reported engaging in daily exercise. Male students were more likely than female students to "follow a structured exercise program," exercise intensely for 20 minutes or more three times a week," and "participate in recreational physical activities. This result was in contrast with the paper designed by Lee et al., (2015) who reported that more than half of teenage recorded that; they practice physical activity regularly, and that boys have a gets activated for regular exercise than girls. From the researcher's point of view; college students, in comparison to young adults in general, are more likely to be obsessed with their academic life, which undertake a lot of time and effort that preventing them from engaging in regular physical activity (Lee et al., 2015).

This finding was in disagreement with Dong (2019) who found that the hat the total score of health-promoting life styles behaviors among college pupils was 62.84, implying that the average scores of all Pender dimensions were lower than 70. Life-appreciation had the highest mean value (69.97), followed by social support, psychological support which had fairly comparable mean values (Dong et al., 2019).

Concerning correlation between socio-demographic characteristics and the total lifestyles and Pender determinants score of studied students through the study phases. Current study reported that, a significant positive correlation between sex, academic year and father occupation of the studied students and their total Pender's determinants of healthy behaviors score three months post- program intervention is observed. Also, there was a significant correlation between sex, academic year, type of family and father occupation of studied students and their health promoting lifestyles score after program intervention as (P value$\leq$ 0.05).

This finding was in the same line with Abozaid et al., (2020) who showed that, a highly significant difference between the total health promoting behaviors of the studied students and their age, academic year, accommodation type and residence (P$\leq$0.01) were observed. While, there was statistically significant relation with their sex and marital status at $p < 0.05$ (Abozeid et al., 2020)

Conclusion

According to the findings of the present study, the educational program was effective and improved the adherence level to healthy lifestyle practices among studied students through the study stages. Furthermore, the current study revealed that there was a highly statistical difference with significantly among the studied students in all Pender's determinants score of healthy behaviors before and after three months post-program intervention.

Recommendations:

Lectures, workshops, and campaigns with periodic refreshment in service training should be regularly organized to empowering undergraduate students in

different faculties in order to equip them with adequate knowledge on health promotion lifestyles behaviors.

Health teaching schemes should discuss strategies for health promoting lifestyles behaviors, not only curative health among adolescence and adults.

University curriculum planners should concentrate that topics related to health promotion and prevention of diseases activities in the curriculum especially of students in the medical field.

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