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Original Research Article

The Effectiveness of a Health Promotion Program Based on Pender's Health Promotion Model (HPM) for Students with Chronic Illnesses

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Abstract

***Background*:** Nursing students often struggle to maintain their health due to the rigorous demands of their curriculum, which frequently involves long hours of clinical work and exposure to stressful environments. ***Objective*:** This research study sought to investigate the effectiveness of a health promotion program based on Pender's Health Promotion Model (HPM) for nursing students with chronic illnesses. ***Methods*:** The study utilized a quasi-experimental design, including 105 nursing students from several institutions—55 participants belonging to an experimental group and 50 in the control group. To determine the students' quality of well-being prior- and post-treatment/phases, researchers monitored their health behaviors utilizing the Health-Promoting Lifestyle Profile II (HPLP-II) survey tool. The program included educational activities designed around coping with chronic diseases such as nutritional counseling or exercise planning also practical tools like stress management protocols/particulars along with peer support constructs/frameworks as key components in addressing adverse effects associated with such conditions. ***Results*:** Based on the results of the paired t-tests, a significant increase in HPLP-II scores was identified after the intervention in those assigned to the experimental group. Furthermore, an independent t-test highlighted that a significant difference existed between the average HPLP-II score for experimental and control groups. ***Discussion*:** These findings were scrutinized within Pender's Health Promotion Model framework to identify which aspects of the intervention contributed most efficiently to improved health behaviors and resultant outcomes. ***Conclusion*:** This research study established compelling evidence which supports the utilization of Pender's Health Promotion Model in improving health-promoting behaviors among nursing learners with chronic ailments. This finding could help nursing educators and healthcare professionals to outline interventions for this particular demographic group.

Keywords: Nursing students, chronic diseases, Pender's Health Promotion Model, health-promoting behaviors.

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INTRODUCTION

Healthcare professionals worldwide acknowledge the value of health promotion in managing chronic diseases. In modern societies where chronic conditions prevail, effective models that guide healthy behavior have become increasingly important. One such framework is the Health Promotion Model (HPM), created by Nola Pender. The HPM offers theoretical insights into how individual experiences, personal factors, and behavior-specific cognitions and affects contribute to health-promoting behaviors. Central to this model is an emphasis on the interactive nature of these elements which combine to influence overall health outcomes for individuals. According to Pender's model, several primary factors drive these behaviors. This include things like perceived benefits of action, self-efficacy, activity-related affect, situational and interpersonal influences.

Nursing students often struggle to maintain their health due to the rigorous demands of their curriculum, which frequently involves long hours of clinical work and exposure to stressful environments. Nursing education often entails navigating challenging academic and clinical demands which can leave nursing students susceptible to health-compromising habits. It is common knowledge that this group is more likely to face

chronic illnesses. Blake *et al*., (2011), note that academic pressure easily upend personal health goals among nursing students. These include bad eating habits, little physical activity and poor sleeping patterns (Sütcü *et al*., 2022; Hershner & Chervin, 2014). As a result, nursing students are prone to chronic diseases. Similarly, many studies identify mental health as an area of concern requiring rapid intervention (Moir *et al*., 2018; Clough *et al*., 2017).

Pender's Health Promotion Model (HPM) presents a promising framework for managing chronic diseases among nursing students by encouraging self-care practices. This study seeks to investigate whether integrating the components of Pender's model into a health promotion program would improve health outcomes for nursing students with chronic illnesses. The findings of this research could provide guidance for healthcare professionals and educators when designing interventions that promote healthier behaviors in nursing students who face these unique challenges.

Hypothesis

The hypothesis for this study were outlined as follows;

Null Hypothesis: *There is no significant difference in the health promoting behaviour of nursing students with chronic diseases after the intervention compared to the control group.*

Alternative Hypothesis: *There is a significant difference the health promoting behaviour of nursing students with chronic diseases after intervention compared to the control group.*

LITERATURE REVIEW

The Health Promotion Model (HPM) developed by Pender has garnered ample attention within the healthcare realm for its effectiveness in promoting healthy practices. The model provides a holistic theoretical framework that enables a profound comprehension of the intricate nature of health behaviors and their impacting factors (Pender *et al*., 2011). In highlighting the proactive components of health behavior, the HPM lays emphasis on personal experiences and cognitive processes as influential attributes affecting one's choices about staying healthy (Pender *et al*., 2011).

Pender's HPM, specifically in the context of chronic diseases, has proven useful for guiding health promotion interventions. A variety of studies have applied the HPM and achieved success in improving health-promoting behaviors among individuals living with such conditions. In particular, Rezaeemanesh *et al*., (2020) reported significant improvements in diabetic patients' health-related behaviors when implementing an intervention based on Pender's model. Similarly positive results were found by Khodaveisi *et al*., (2017) regarding diabetes management programs inspired by the HPM. Researchers have found that this model is especially effective at addressing distinct needs of nursing students. One such finding is by Cheng *et al*., (2010) who leveraged Pender's framework to successfully improve self-efficacy among nursing students while also promoting better self-care habits. Sami *et al*.,'s (2017) established very similar results indicating the benefits attributed to implementation of the Pender HPM.

Numerous studies have delved into the utilization of Pender's Health Promotion Model (HPM) in the mental health sphere. Specifically, Chen *et al*., (2021) employed the HPM as a theoretical framework to forecast depressive symptoms. This study highlighted how versatile this model is in application. Not only does it facilitate understanding and influencing physical health behaviors, but it also has considerable potential for analyzing and shaping mental health practices. Pender *et al*., (2011) were primarily focused on personal traits and individual experiences when developing the Health Promotion Model (HPM). However, some researchers argue that supplementary factors should be considered. Orji *et al*., (2012) and Szalavitz (2012) suggest integrating self-identity into HPM. This is because one's perception of their self can greatly affect their health behaviors including willingness to adopt healthy practices or follow recommended medical procedures.

Strathman *et al*., (1994) introduced an interesting and noteworthy viewpoint on "Consideration of Future Consequences" (CFC) that could have a profound impact on our health behaviors. According to Strathman *et al*., (1994), an individual's decision-making process regarding present decisions can greatly modify their future health-related actions based on how they weigh potential outcomes. Deshpande *et al*., (2009) added to this concept by introducing "perceived importance," which was differentiated from HPM's "perceived benefits." While perceived benefits highlight whether a specific behavior effectively mitigates health risks, perceived importance pertains to how significant individuals find the provided results of such behavior. Although Pender's HPM is a valuable theoretical model within the field of health promotion, it does come with its share of inherent limitations. One crucial drawback to consider is that accurately measuring aspects of the HPM such as perceived benefits, barriers, and self-efficacy can be challenging for researchers (Srof & Velsor-Friedrich, 2006).

METHODS

Study Design

The study employed a quasi-experimental study design. This approach involves administering pre-test and post-test measures to participants, which is suitable for our study since randomly assigning participants to chronic condition management groups is neither practically possible nor ethical. To create the two different groups in our research - an experimental group and a control group - matched pairs approach will be used based on relevant demographic factors such as gender,

age, type of chronic disease, and other health-related parameters.

Sampling

The study will utilize a sample of 105 nursing students with various chronic disorders. The primary requirement for potential participants is confirmation of diagnosis with a documented report from a licensed healthcare physician as well as enrollment in a current nursing curriculum. Individuals who refuse participation or cannot commit to the duration of the study are excluded.

Informed Consent

After reading and comprehending the informed consent form, participants will be requested to sign the document. To ensure proper adherence to ethical guidelines, approval from respective Institutional Review Boards (IRBs) at participating institutions applies to the entire research protocol.

Instrument

To assess the health habits of those taking part in the study, we employed a verified tool called the Health-Promoting Lifestyle Profile II (HPLP-II). This instrument, grounded on Pender's Health Promotion Model (HPM), gauged six major aspects encompassing overall fitness control.

Physical Activity: This dimension focuses on assessing regular exercise regimens in terms of duration and intensity.

Nutrition

Assessing the dietary habits of our participants for factors. These include their comprehension of nutritional needs, consumption of fruits and vegetables, avoidance of unhealthy foods, and commitment to balanced diets.

Stress Management

Assess participant's coping mechanisms against stress while considering their use of relaxation techniques like deep breathing exercises, yoga, and meditation.

Health Responsibility

Assessing the extent to which participants took an active role in maintaining their own well-being by engaging in preventative health measures such as regular check-ups, self-examinations, and vaccinations.

Interpersonal Relations

Analyzed participants' interpersonal relationships as part of the Health Promoting Lifestyle Profile-II assessment. This dimension focused on evaluating communication skills, conflict resolution abilities, and support systems and how they contribute to overall health.

Spiritual Growth

This component focused on measuring how participants aspire to advance themselves personally, improve their individual selves, and acquire a sense of direction in life.

Intervention

A health-promotion program that adhered to Pender's HPM was formulated as an intervention for nursing students, diagnosed with a chronic disease. To empower the participants on how to manage their specific chronic diseases, we conducted all-inclusive education sessions. We discussed extensively; each participant's ailment and its progression stages with potential complications to aid them in self-monitoring and emergency response measures. Incorporated into this intervention is one-on-one nutritional supportive counseling with registered dietitians. The aim of these counseling sessions was more specifically, individuals understanding their dietary requirements precisely and providing them with efficiently personalized meal plans that will help control their respective chronic illnesses effectively.

To ensure the physical well-being of participants in our intervention program, we enlisted a professional physiotherapist to develop and supervise tailored exercise regimens that took into account their individual chronic health conditions. The aim of these regimens was to promote better physical fitness while minimizing any potential risks or limitations. We integrated various stress management techniques in our program in recognition of the impact stress has on health behaviors and chronic disease management. These included mindfulness practices, deep breathing exercises, and yoga, among others. Additionally, we structured regular peer support group sessions for our participants. These groups provided a safe space where they could share their experiences related to managing their chronic illnesses.

Data Analysis

The study utilized paired t-tests to evaluate discrepancies between Health-Promoting Lifestyle Profile II (HPLP-II) scores prior to and after implementation within each group. This type of inferential test enabled us compare mean scores for individual subjects at two different points in time. The use of this testing allowed us to determine whether changes in HPLP-II scores can be attributed accurately or not solely due to implementing our health-promotion program. The independent t-test allowed comparisons between two autonomous groups through inferential statistical tests that incorporated examining whether the implementation of health-promotion programs showed a substantial impact on outcomes in the experimental group as compared to the control group. The significance level was set at <0.05.

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RESULTS

Table 1 visualizes the demographic features of our participants. The data demonstrates that both groups were carefully selected, having similar age ranges, gender diversities, and chronic issues. This careful selection process ensured that any disparities detected between the two groups resulted solely from the intervention they received.

Table 1: Demographic Characteristics of Participants

Group	Total Participants	Age Range	Gender		Chronic Condition
			Male	Female	
Experimental Group	55	20-25 years	35	20	Diabetes (22), Hypertension (18), Asthma (15)
Control Group	50	20-25 years	30	20	Diabetes (20), Hypertension (15), Asthma (15)

Table 2 reflects pre-test and post-test scores on the HPLP-II for both groups. A paired t-test reveals a significant positive shift in mean score after program participation among those in the experimental group. Conversely, no marked statistical difference was observed regarding scores from control group respondents.

Table 2

Group	Pre-Test Mean Score	Post-Test Mean Score	Mean Difference	P-value
Experimental Group	137.8	161.1	23.3	<0.001
Control Group	139.1	142.2	3.1	0.256

Furthermore, an independent t-test aimed at weighing mean score changes between both groups confirmed that the experimental cohort's increase was significantly higher than those observed amongst their peers undergoing standard care ($p<0.001$).

DISCUSSION

The focus of the study was to examine the effects of applying Pender's Health Promotion Model (HPM) intervention program on nursing students with chronic illnesses. The investigation recorded significant improvements in health behavior amongst the test group, indicating that HPM management was effective. These findings coincide with past research stressing the usefulness of Pender's HPM when promoting healthy habits.

Our intervention program was designed in accordance with Pender's HPM principles, utilizing six key constructs from the model. The experimental group showed marked improvement after the intervention, affirming the successful application of these constructs. For example, strategies were introduced to emphasize the benefits of health-focused actions and eliminate perceived obstacles which aligns with HPM's perceived benefits of action and perceived barriers to action. These positive outcomes have been observed in several other studies that leveraged the HPM framework as well. Bang *et al*., (2014) found evidence demonstrating that improving physical activity levels for university students can be successfully accomplished using HPM-based interventions. Pérez-Jorge *et al*., (2021) research lends credence to how effective interventions based on senior high school student behaviors could be leading towards a more inclusive diet patterns among college adolescents-driven by implementing the six essential circuits defined within Pender's Health Promotion Model.

Moreover, our emphasis on strengthening self-efficacy by means of peer support and positive reinforcement aligns with research like Vakilian *et al*., (2021). This study established, that self-efficacy is an important prognosticator of health-promoting conduct. This connection highlights the significance of promoting confidence in a person's ability to adopt and maintain healthier habits.

Despite its many benefits, it is worth noting that our research had several limitations. For example, because of the specific demographics of nursing students from chosen institutions, there may be a lack of generality to our findings. Consequently, future studies could consider using a more diverse pool of participants to increase generalizability. Additionally, since our study utilized a quasi-experimental design as opposed to a randomized controlled trial there might be some selection bias that hinders the definite attribution for any observed changes solely related to the intervention. Lastly, while the application of the HPLP-II apparatus is accredited and generally recognized, it hinges on self-reported information that may be prone to bias. In light of this, future research may contemplate integrating self-report evaluations with more objective measures rooted in health behaviors so as to improve the veracity of results.

CONCLUSION

Our study has revealed the potential effectiveness of employing Pender's Health Promotion

Model (HPM) as a foundation for enhancing health-promoting behaviors among nursing students with chronic diseases. We have observed significant improvements in health behavior scores among the experimental group after incorporating the core constructs of Pender's HPM into an intervention program. The implications of these findings are paramount for both nursing education and healthcare practice. Nursing instructors can derive insight from our results to develop well-targeted interventions that cultivate healthier behaviors and improved management of persistent conditions among their students. Likewise, healthcare professionals can utilize this research to author highly customized, patient-centered treatment plans that assess not only the physical manifestations but also psychological and behavioral aspects linked to positive health outcomes. Future research can delve into the different populations, cultures, and diseases to further explore the model's efficiency. This will result in conclusive evidence to support its usefulness and facilitate our understanding of improved ways to promote healthy lifestyles and disease management.

RECOMMENDATIONS

In order to enhance the health behaviors of nursing students, there are various effective approaches that align with Pender's HPM. One approach could be designing workshops specifically geared towards educating the students about different aspects related to health such as chronic disease prevention and management, medication adherence significance, ways for self-monitoring symptoms and how to maintain a balanced lifestyle. This will boost the student's knowledge about their overall health, empowering them to make informed choices on pertinent health issues. Secondly organizing regular fitness classes or hosting sporting activities is a great way of encouraging physical activity amongst the learners which in turn promotes wellness and helps manage ongoing ailments effectively. Students can benefit from tailored assignments on creating customized personal fitness routines mindfully using resources available within the campus. In addition to this, providing students with essential information regarding sedentary lifestyles coupled with ergonomic practices during prolonged study hours could greatly improve their overall welfare and clinical practice.

In addition, stress management programs hold substantial value for nursing students who are no strangers to high-pressure situations. Nursing students may utilize various stress-relieving techniques. These include mindfulness, meditation, deep breathing and yoga that could be taught as part of the nursing programs. Additionally there may also be an advantage in prioritizing accessibility towards mental health services available within the institution like counseling. Also crucial is the establishment of peer support systems. As chronic illness can sometimes induce afflictions like isolation or hopelessness, it is paramount that student networks are created where fellow learners alike can share experiences and alleviate these concerns together.

Last, it is important to prioritize nutrition counseling in promoting optimal health. Adopting a healthy dietary regime is crucial in managing chronic diseases and enhancing one's well-being. Combining healthy cooking workshops, collaborations with local markets to ensure availability of nutrient-dense foods, and offering comprehensive nutritional guidance will enable nursing students living with chronic conditions make informed decisions about food choices. The ultimate goal for these proposed initiatives is to establish a holistic approach aimed at cultivating lifelong habits of wellness among this segment of the student population.

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Availability of Data and Materials

The data sets generated and analyzed during the current study are available on request due to privacy/ethical restrictions.

Declaration of Interest Statement: The authors declare that they have no competing interests.

Compliance with Ethical Standards

All procedures performed in study were in accordance with the ethical standards of the institutional and/or national research committee

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Informed Consent: All participants signed an informed consent form before engaging in the study.

Author Contributions

All authors contribute in concept and design of the study, Acquisition of data and data analysis, critical revision of the manuscript and final approval of the version to be submitted. So they were equally as the first author.

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