

✧ RESEARCH PAPER ✧

# *Registered nurses' beliefs of the benefits of exercise, their exercise behaviour and their patient teaching regarding exercise*

**Eileen M Esposito DNP MPA RN-BC**

*Assistant Executive Director, Physician & Ambulatory Network Services, North Shore-LIJ Health System, Manhasset, New York, USA*

**Joyce J Fitzpatrick PhD MBA RN FAAN**

*Elizabeth Brooks Ford Professor of Nursing, Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, Ohio, USA*

*Accepted for publication May 2011*

Esposito EM, Fitzpatrick JJ. *International Journal of Nursing Practice* 2011; 17: 351–356

## **Registered nurses' beliefs of the benefits of exercise, their exercise behaviour and their patient teaching regarding exercise**

Recommendations by experts have been in place for > 10 years encouraging every adult to participate in  $\geq 30$  min of daily moderate-intensity physical activity. Despite extensive research supporting the value of physical activity, only about one-third of all adults meet physical activity recommendations. Using Pender's Health Promotion Theory as the framework, this study was focused on the relationships between nurses' beliefs regarding the benefits of exercise, their exercise behaviour and their recommendation of exercise for health promotion or as part of a treatment plan. Results showed positive correlations between exercise benefits, physical activity and recommendation of exercise to patients. Nurses who believe in health promotion and embrace healthy behaviours are more likely to be positive role models and teach healthy behaviours to their patients. Recommendations for practice and future research are included.

**Key words:** benefits of exercise, exercise behaviour, health promotion, nurses' beliefs, patient teaching.

## **INTRODUCTION**

Recommendations by experts have been in place for > 10 years encouraging every adult to participate in  $\geq 30$  min of moderate-intensity physical activity on all or at least most days of the week.<sup>1</sup> The US Department of Health and Human Services reports that despite extensive research supporting the value of physical activity only

about one-third of all adults met physical activity recommendations and 37% report no exercise at all.<sup>2</sup> Kelley and Abraham identified the crucial role nurses play in delivering health promotion advice as nurses interact with many people at key points in their lives.<sup>3</sup>

Although nurses have a professional responsibility to patients, they also have the opportunity to be role models. Researchers predict that > 40% of working nurses will be > 50 years old in 2010<sup>4</sup> and will be at increased risk for cardiovascular disease as they enter menopause.<sup>5</sup> This, coupled with the fact that < 50% of women > 50 years of age exercise regularly, suggests that nurses need to exercise more.<sup>6,7</sup>

*Correspondence:* Eileen M. Esposito, Physician & Ambulatory Network Services, North Shore-LIJ Health System, 600 Community Drive, suite 302, Manhasset, NY 11030, USA. Email: EileenEspositoDNP@gmail.com

Despite the wealth of evidence supporting the positive impact of exercise on health, the majority of practising nurses are overweight.<sup>8,9</sup> This failure to practise healthy behaviours limits the influence nurses have on promoting healthy outcomes of their patients through patient teaching and role modelling of healthy behaviours.<sup>10</sup>

### Purpose of study

The purpose of this study was to examine the relationships of nurses' beliefs of the benefits of exercise, their exercise behaviour and their recommendation of exercise to patients. The research questions were:

1. What is the relationship between the nurses' beliefs of the benefits of exercise and their reported exercise behaviour?
2. What is the relationship between the nurses' beliefs of the benefits of exercise and their recommendation of regular exercise to patients?
3. What is the relationship between the nurses' exercise behaviour and their recommendation of regular exercise to patients?

### Background

Pender's Theory of Health Promotion provided the framework for this study. According to this model, the perceived benefits of action directly motivate behaviour of an individual as well as indirectly motivate behaviour through determination of the extent of the commitment to the plan of action from which the expected benefits will result. Health promotion is the goal of nursing interventions.<sup>11</sup>

#### *Self-efficacy, perceived benefits and barriers to exercise, and exercise behaviour*

In a study of 970 Thai nurses, researchers identified a significant relationship between exercise participation and a set of predictor variables, which included perceived self-efficacy, perceived benefits of and perceived barriers to exercise.<sup>12</sup> Other researchers showed that gender, social support, modelling, self-efficacy, and perceived benefits of and barriers to exercise directly influenced physical activity behaviour.<sup>13,14</sup> In a study of 113 nurses in the UK, participants were asked to rate health behaviours on a scale of 1–10, with 1 being the least important and 10 being the most important. The nurses rated exercise as number 8. Nurses who rated the importance of physical activity to health as high also reported exercising more than those who rated it lower.<sup>15</sup>

#### *Relationship of personal beliefs and personal health behaviour on patient teaching*

The relationship between nurses' personal health beliefs and behaviours, the nurses' personal health behaviours, and the nurses' counselling of patients about health issues has been examined in several studies. Researchers have found that nurses who practised healthy behaviours were more likely to counsel patients regarding healthy behaviours and reported that non-compliance of health-promoting behaviours in patients has been influenced by the non-compliant behaviours of those caring for them.<sup>15–18</sup>

Patient teaching occurs most often when health behaviours are practised frequently by the health professional. A common theme among health practitioners was that they understood the value of physical activity health promotion teaching, but that there was little time in the work day for preventive counselling as their focus was the acute illness or reason for hospitalization.<sup>7,19,20</sup> Based on these studies, an empirical link has been established between the health practices of health professionals and their behaviour towards the patients in their care. As the largest group of health-care providers and those who spend the most amount of time with patients, nurses are in an optimal position to impact on patient health by teaching healthy behaviours and health promotion.<sup>3,9</sup>

The number of studies found in the literature that examine the perceived benefits of exercise and reported physical activity of nurses is limited. Researchers in Ireland,<sup>3</sup> Thailand<sup>12</sup> and the UK<sup>19</sup> examined nurses' perceptions and experiences related to health promotion. In the USA, studies of exercise beliefs and barriers were more often conducted among the lay public or university students.<sup>21–23</sup> Studies examining the relationship between healthy behaviours/exercise and health promotion counselling were limited for nurses and often included nutritionists, physicians, midwives and physical therapists.<sup>20,24</sup>

In summary, research supports both the positive relationship between the beliefs of the benefits and exercise behaviour and the positive relationship between practitioners who practise healthy behaviours (including exercise) and the likelihood of teaching exercise as a health-promoting behaviour. A gap in the literature exists related to the relationship of beliefs of the benefits of exercise and the tendency of health professionals to recommend exercise to patients.

## METHODS

The study design was a correlational descriptive study of three key variables: beliefs regarding the benefits of exercise, reported exercise behaviours and recommendation of exercise to patients for health promotion or as part of a treatment plan. The study was conducted at a hospital in New York. This quaternary care hospital has  $\approx$ 1000 beds and employs > 2000 registered nurses who work in both inpatient and outpatient settings.

### Sample

All registered nurses who provide direct patient care to adult non-critical care medical and surgical patients and who are employed either full-time or part-time at the hospital were invited to participate. The nurses were recruited using email, word of mouth and posters. Registered nurses who provide care in critical care environments where teaching of exercise for health promotion could not be reasonably expected (e.g. operating room, intensive care unit, emergency room, labour and delivery, etc.) were excluded. A convenience sample of 112 nurses completed the questionnaire.

### Measures

Beliefs of the benefits of exercise were measured using the Exercise Benefits/Barriers Scale (EBBS).<sup>25</sup> The beliefs of the benefits were determined using the EBBS benefits subscale score with a higher score reflecting the individual's feelings of stronger positive benefits of exercise.<sup>25</sup> The score range is noted to be 29–116. Cronbach's alpha was established at 0.95.<sup>25</sup>

Exercise behaviour was measured using the physical activity subscale of the HPLP-II (Health-Promoting Lifestyles Profile-II).<sup>25</sup> The instrument contains 52 items that can be scored wholly or divided into six subscales. The physical activity subscale consists of eight items with a possible range of 8–32; the higher the score, the greater the exercise behaviour of the respondent.<sup>26</sup> A Cronbach's alpha of 0.85 was noted for the exercise subscale.<sup>27</sup> Similar to the methodology used by Jones and Nies,<sup>28</sup> this researcher used the physical activity subscale in this study as a measure of reported exercise.

Recommendation of exercise to patients was measured using two statements. Patient teaching of exercise for health promotion was defined as the routine education or promotion of exercise as part of the teaching

plan for a healthy lifestyle and wellness. The statement 'I recommend regular exercise to patients for health promotion' was used to assess recommendation of exercise for health promotion. A second statement, 'I recommend exercise to my patients as part of their treatment plan for their condition', was used to determine recommendation of exercise as part of a treatment plan. The response to the statements regarding teaching of exercise for health promotion and teaching exercise as part of a treatment plan were scored on a 1–10 response scale with 1 representing a weak response and 10 representing a strong response.

### Instrument reliability

The Cronbach's alpha of the EBBS benefits subscale was calculated. The 29-item subscale yielded a standardized Cronbach's alpha of 0.95, which is equal to the standardized Cronbach's alpha of 0.95 reported by the authors.<sup>26</sup> Similarly, the standardized Cronbach's alpha for the eight-item HPLP-II physical activity subscale was observed at 0.84 favourably comparing to previous research.<sup>27</sup> The recommendation of exercise for health promotion and the recommendation of exercise as part of a treatment plan scores were not examined for reliability as they are both single-item instruments.

## RESULTS

### Characteristics of the sample

Ninety-three per cent of the nurses were female and the average age of all respondents was 43 years. The majority work the day shift (79%) and 50% have bachelor's degrees. The mean body mass index (BMI) for males was 31.78 and all were overweight or obese. Three (42.9%) were identified as overweight and four (57.1%) were obese. Of the 96 female nurses, 84 included height and weight data. The mean BMI for women was 25.76. Two female nurses were underweight (2.3%), 43 female nurses were normal weight (51.1%), 25 were overweight (30%) and 14 were obese (16.6%).

When BMI was calculated for the total participants who responded to the relevant questions ( $n = 98$ ), including respondents who did not identify their gender, the findings showed 2% ( $n = 2$ ) were underweight, 49% ( $n = 48$ ) were normal weight, 30.6% ( $n = 30$ ) were overweight and 18.4% ( $n = 18$ ) were obese. Table 1 details the characteristics of the sample.

In the observed sample of 112 nurses, the belief in the benefits of exercise observed range was 62–113,

mean = 89.31, SD = 11.36 and the exercise behaviours subscale score observed range was 8–32, mean = 18.57, SD = 4.88. The nurses' recommendation of exercise for health promotion score using the statement, 'I recommend regular exercise to my patients for health promotion', mean = 7.13, SD = 2.59 ( $n = 112$ , range = 1–10). The data were skewed in that 50% of responses were  $\geq 8$  and the top quartile was 9–10. The nurses' recommendation of exercise as part of a treatment

plan measured using 'I recommend exercise to my patients as part of their treatment plan for their condition' showed a mean = 6.88, SD = 2.78 ( $n = 112$ , range = 1–10). The data were skewed with the first quartile = responses between 1 and 5, second quartile = responses between 5 and 8, third quartile = responses between 8 and 9, and the top quartile = responses between 9 and 10. These results are included in Table 2.

**Table 1** Sample characteristics ( $n = 112$ )

Characteristic	N (%)	Mean $\pm$ SD	Range
Age <sup>†</sup>	96 (100.0)	43.42 $\pm$ 11.03	22.0–61.0
Gender <sup>†</sup>	103 (100.0)		
Male	7 (6.8)		
Female	96 (93.2)		
Education <sup>†</sup>	109 (100.0)		
Diploma	1 (0.9)		
Associate	34 (31.2)		
Bachelors	57 (52.3)		
Masters	15 (13.8)		
Doctorate	2 (1.8)		
Setting <sup>†</sup>			
Inpatient	64 (58.7)		
Outpatient	45 (41.3)		
BMI <sup>†</sup>	98 (100.0)	25.97 $\pm$ 5.57	15.7–44.9
Underweight	2 (2.0)		
Normal wt	48 (49.0)		
Overweight	30 (30.6)		
Obese	18 (18.4)		

<sup>†</sup> Missing data. BMI, body mass index.

A Pearson's product–moment correlation was calculated for the two exercise teaching statements,  $r = 0.88$ ,  $P = 0.000$  indicating a strong, positive linear relationship. Given the mean value of  $\approx 7$  for each exercise recommendation statement on a scale of 1–10 and the relatively small SD of  $\approx 2.65$ , the responses clustered towards the higher end of the scale indicating a fairly strong exercise recommendation response regardless of the reason for the recommendation. Table 2 includes responses to the EBBS, HPLP-II and exercise recommendation items.

Both the parametric and non-parametric correlation coefficients were calculated (Pearson product–moment correlation coefficient and Spearman's Rho). Minimal difference was found between the test results for parametric vs. non-parametric, and histograms depicted a normal distribution. Based on this, the analysis was performed using the Pearson product–moment correlation; scatter plots were run to visually inspect the correlation results.

Pearson product–moment correlation was calculated for the variables EBBS-benefits subscale score and the HPLP-II/physical activity subscale score. Pearson product–moment correlation coefficient of 0.51,  $P = 0.000$  was identified indicating a positive, moderate–

**Table 2** Responses to the EBBS, HPLP-II and exercise recommendation items ( $n = 112$ )

Instrument	N (%)	Mean $\pm$ SD	Range
EBBS			
Benefits subscale	112 (100)	89.31 $\pm$ 11.35	62–113
HPLP-II			
Physical activity	112 (100)	18.57 $\pm$ 4.88	8–32
Exercise recommendation			
Health promotion	112 (100)	7.13 $\pm$ 2.59	1–10
Treatment plan	112 (100)	6.88 $\pm$ 2.78	1–10

EBBS, Exercise Benefits/Barriers Scale; HPLP-II, Health-Promoting Lifestyles Profile-II.

strong linear relationship. The mean observed physical activity score was 18.57, SD = 4.88, range 8–32.

The results indicate that there is a positive, moderate–strong relationship between the nurses' beliefs of the benefits of exercise and their exercise behaviour. Similar results were found between nurses' exercise behaviours and their recommendation of exercise to patients. The variable 'recommendation of regular exercise to patients' was assessed by using two statements, each designed to capture a different aspect of patient teaching. Pearson product–moment correlation was calculated for each statement with the HPLP-II/physical activity subscale score. A correlation coefficient of 0.20,  $P = 0.03$  for the HPLP-II/physical activity subscale score and statement one (teaching for health promotion) indicated a positive relationship. A correlation coefficient of 0.25,  $P = 0.007$  was calculated for the HPLP-II/physical activity subscale score and statement two (teaching as part of treatment plan) indicating a positive relationship.

The Pearson product–moment correlation was calculated separately for each statement with the EBBS-benefits subscale score to assess the relationship between beliefs and teaching of exercise. A correlation coefficient of 0.22,  $P = 0.017$  for the EBBS-benefits subscale score and statement one (teaching for health promotion) was identified indicating a positive relationship. A correlation coefficient of 0.25,  $P = 0.009$  was identified for the EBBS-benefits subscale score and statement two (teaching as part of treatment plan) indicating a positive relationship.

## DISCUSSION

The BMI results in the present study were lower than those found by Miller *et al.*<sup>9</sup> in their six-state study of nurses. The mean BMI of the sample group was 27.2 and almost 54% of this group was overweight or obese. By comparison, the grand mean BMI of the observed sample was 25.96 and 49% were overweight or obese; 18.4% obese. Review of statistics for the USA shows 66.3% of the population are overweight or obese, 32% are obese. New York State statistics shows 25.2% of all adults > 20 years old are obese.<sup>28</sup> The results indicate that the nurses in the present study are lower in weight than the general population. Similar comparison is drawn between the study sample and the sample of 511 female nurses studied by Allison.<sup>8</sup> In Allison's sample group, 52.1% were noted to be overweight or obese with an average BMI of 27.3 (SD = 6.6) at a time when women in the general population were noted

to have an overweight/obesity prevalence of 49% and an average BMI of 26.2%.<sup>8</sup> Female nurses in this study more closely match the demographics of the women in the general population in 2005. These results suggest that the female nurses in the study group are thinner than nurses observed in other studies and have BMIs that more closely match women in the general population.

According to the US Center for Disease Control,<sup>29</sup> 33.3% of men and 35.3% of women in the general population in 2005–2006 were obese. Obesity in the observed group deviated significantly from the norm: male nurses = 57.1% obese, female nurses = 16.6% obese. It is noted that the observed male sample size is low and the results are not generalizable to all male nurses in the USA.

The results of this study support previously established links between beliefs of the benefits of exercise and exercise behaviour. Links between exercise behaviour and recommendation of exercise to patients also are supported. The results of this study suggest that there is a link between beliefs of the benefits of exercise and recommendation of exercise might exist. The results suggest that physical activity and beliefs of the benefits of exercise have very similar influence on the nurses' recommendation of exercise to patients. Opportunities to influence the nurses' beliefs of the benefits of exercise in the form of structured classes and in-services, health fairs and motivational signage might have a direct impact on nurses' patient teaching of exercise and might be important influences in nurses' recommendations of exercise.

## Conclusion

Although this study would need to be replicated in different settings and regions before the findings could be generalized, the study offers new insights into potential ways to influence patient teaching of exercise. The prospect of impacting the personal exercise behaviours of nurses and potentially influencing the health behaviours of others is in alignment with the tenets of health promotion and large-scale population health management. The use of exercise to improve health and reduce the disease burden of future generations is an admirable goal for nurses and patients alike.

## REFERENCES

- 1 Haskell WL, Lee I-M, Pate R *et al.* Physical activity and public health: Updated recommendations for adults from the American College of Sports Medicine and the American Heart Association [Electronic Version]. *Circulation* 2007; **116**: 1081–1093. Retrieved 12 December 2010.

- 2 USDHHS. *Physical Activity Facts*. 2008. Available from URL: [http://www.fitness.gov/resources\\_factsheet.htm](http://www.fitness.gov/resources_factsheet.htm). Accessed 1 October 2011.
- 3 Kelley K, Abraham C. Health promotion for people aged over 65 years in hospitals: Nurses' perceptions about their role. *Journal of Clinical Nursing* 2007; **16**: 569–579.
- 4 Buerhaus P, Staiger D, Auerbach D. Implications of an aging registered nurse workforce. *Journal of the American Medical Association* 2000; **283**: 2948–2954.
- 5 Verhoeven MO, van der Moorem MJ, Teerlink T, Verheijen RHM, Scheffer PG, Kenemans P. The influence of physiological and surgical menopause on coronary heart disease risk markers. *Menopause* 2009; **16**: 37–49.
- 6 Dearden JS, Sheahan SL. Counseling middle-aged women about physical activity using stages of change. *Journal of the American Academy of Nurse Practitioners* 2002; **14**: 492–497.
- 7 Schwab N. Risk of coronary heart disease, dietary fat modification, stages of change, and self-efficacy in surgically and naturally post-menopausal women. *Journal of Women's Health and Gender-Based Medicine* 2000; **9**: 1089–1099.
- 8 Allison S. Biographic and psychobehavioral influences on body mass index in a nursing sample. *Western Journal of Nursing Research* 2005; **27**: 7–20.
- 9 Miller SK, Alpert PT, Cross CL. Overweight and obesity in nurses, advanced practice nurses and nurse educators. *Journal of the American Academy of Nurse Practitioners* 2008; **20**: 259–265.
- 10 Hicks M, McDermott LL, Rouhana N, Schmidt M, Seymour MW, Sullivan T. Nurses' body size and public confidence in ability to provide health education. *Journal of Nursing Scholarship* 2008; **40**: 349–354.
- 11 Pender NJ. *Health Promotion in Nursing Practice*, 3rd edn. Stamford, CT, USA: Appleton & Lange, 1996.
- 12 Kaewthummanukul T, Brown KC, Weaver MT, Thomas RR. Predictors of exercise participation in female hospital nurses. *Journal of Advanced Nursing* 2006; **54**: 663–675.
- 13 Wu T-Y, Pender N. Determinants of physical activity among Taiwanese adolescents: An application of the health promotion model. *Research in Nursing and Health* 2002; **25**: 25–36.
- 14 Wu T-Y, Pender N. A panel study of physical activity in Taiwanese youth: Testing the revised health-promotion model. *Family and Community Health* 2005; **28**: 113–124.
- 15 Callaghan P. Health beliefs and their influence on United Kingdom nurses' health-related behaviours. *Journal of Advanced Nursing* 1999; **29**: 28–35.
- 16 Callaghan P, Fun MK, Yee FC. Hong Kong nurses' health-related behaviours: Implications for nurses' role in health promotion. *Journal of Advanced Nursing* 1997; **25**: 1276–1282.
- 17 Connolly MA, Gulanick M, Keough V, Holm K. Health practices of critical care nurses: Are these nurses good role models for patients? *American Journal of Critical Care* 1997; **6**: 261–266.
- 18 McDowell N, McKenna J, Naylor P-J. Factors that influence practice nurses to promote physical activity. *British Journal of Sports Medicine* 1997; **31**: 308–313.
- 19 Casey D. Nurses' perceptions, understanding and experiences of health promotion. *Journal of Clinical Nursing* 2007; **16**: 1039–1049.
- 20 Ribera AP, McKenna J, Riddoch C. Attitudes and practices of physicians and nurses regarding physical activity promotion in the Catalan primary health-care system. *European Journal of Public Health* 2005; **15**: 569–575.
- 21 Brown SA. Measuring perceived benefits and perceived barriers for physical activity. *American Journal of Health Behavior* 2005; **29**: 107–116.
- 22 Conn VS, Tripp-Reimer T, Maas ML. Older women and exercise: Theory of planned behavior beliefs. *Public Health Nursing* 2003; **20**: 153–163.
- 23 Pawloski LR, Davidson MR. Physical activity and body composition analysis of female baccalaureate nursing students. *Nurse Education in Practice* 2003; **3**: 155–162.
- 24 Howe M, Leidel A, Krishnan S, Weber A, Rubenfire M, Jackson E. Patient-related diet and exercise counseling: Do providers' own lifestyle habits matter? *Preventive Cardiology* 2010; **13**: 180–185.
- 25 Sechrist K, Walker SN, Pender NJ. Development and psychometric evaluation of the exercise benefits/barriers scale. *Research in Nursing and Health* 1987; **10**: 357–365.
- 26 Walker SN, Sechrist K, Pender NJ. The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. *Nursing Research* 1987; **36**: 76–81.
- 27 Carlson ED. A case study in translation methodology using the Health-Promotion Lifestyle Profile II. *Public Health Nursing* 2000; **17**: 61–70.
- 28 Jones M, Nies MA. The relationship of perceived benefits of and barriers to reported exercise in older African American women. *Public Health Nursing* 1996; **13**: 151–158.
- 29 US Center for Disease Control. *Overweight and Obesity: US Obesity Trends*. 2009. Available from URL: <http://www.cdc.gov/obesity/data/trends.html> Accessed 2 October 2009.