PHYSICAL ACTIVITY COUNSELING THROUGH REGISTERED NURSES IN A HOSPITAL SETTING

by

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Abstract

Background and Purpose: Registered nurses (RN's) are well positioned to provide physical activity counseling (PA counseling) to their hospital patients. RNs educate during 'teachable moments" as hospital patients often find themselves in a state of readiness to make lifestyle changes such as increases in regular physical activity. Although the health benefits of physical activity are well documented, PA counseling has not been well studied among the nursing population or in the hospital environment. The main purpose of this study was to identify the percentage of RNs who provide PA counseling to their patients and to explore the factors which contribute to their decisions to provide PA counseling.

Methods: A web-based survey was used to gather information from 323 hospital-based RNs employed at five hospitals in four states. The survey gathered information including current physical activity levels, thirteen perceived barriers to physical activity based on the Exercise Benefits and Barriers Scale, and information regarding whether RNs provide PA counseling to their hospital-based patients.

Results: RNs reported an average of 3.3 barriers to being physically active. One hundred and eighty- seven RNs provided PA counseling to their patients (57.8%) and 133 did not provide PA counseling (41.1%). The presence of barriers to being physically active was related to PA counseling for nine of the thirteen barriers. The following hypotheses were supported: 1) RNs who report lower levels of perceived barriers to being physical active were more likely to provide PA counseling than those who report higher levels of perceived vigorous physical activity were more likely to provide PA counseling than those who reported lower levels of light, moderate, and vigorous physical activity.

Conclusion: The findings from this study revealed RNs who are physically active and report fewer barriers to physical activity were more likely to provide PA counseling to their hospital-based patients. Future research needs to address types and quality of PA counseling as well as utilize theory driven intervention designs.

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Introduction

Registered nurses (RNs) are trained to provide patient counseling as part of routine nursing care. Although the physician oversees the patient's health needs the RN is responsible for much of the treatments and daily tasks required for the inpatient (Blaber 2005). The RN has also taken on an increased importance in the discharge process of the patient from the hospital. Minimally, the discharge process ensures the patient has met the criteria set forth by the physician. More recently, however, the RN has taken on greater responsibility in providing the patient with specific information dealing with the short and long term health strategies once the patient checks out of the hospital (McCready, Littlewood & Jenkinson, 2005). RNs often find themselves in a unique position to provide focused one-on-one education to their hospital patients. The hospital setting provides a real life context which forces patients to confront their health situation. RNs educate during 'teachable moments' as many patients find themselves receptive to health suggestions from a friendly and supportive health professional (Esposito & Fitzpatrick, 2011). Govier and Ress (2013) define teachable moments as the point in which an individual is at a "state of readiness" to make changes in their lifestyle choices. Stages of Change theory, also known as the Transtheoretical model and originally developed by DiClemente and colleagues (1991), recognizes individuals move through a series of stages when modifying behaviors. Many patients after experiencing a hospital stay advance past the early stages of readiness based on new knowledge and a self-analysis of whether the benefits of a health behavior change outweigh the costs of not changing. Health promotion in the hospital setting becomes one of the major goals of nursing interventions and RNs are well positioned to

help motivate and support patients in adopting healthy lifestyle behavior changes (Penderton, 1996; Duffy, Karvonen-Gutierrez, Ewing, & Smith, 2010).

Health information provided by nurses has been shown to be effective in several clinical studies. McKinley and colleagues (2009), for example, noted the positive effects of short-term, one-on-one nursing counseling with heart disease patients. Patients receiving this nursing intervention reported overall lower anxiety associated with responding to the threat of a possible heart attack. Davis (2008), in another study, reported increases in knowledge, perceptions and attitudes towards glucose control among diabetic patients receiving feedback from nurse educators. RNs are also well positioned to deliver messages regarding the importance of physical activity (Esposito & Fitzpatrick, 2011). The American College of Sports Medicine and the American Medical Association in 2007 launched a new program designed to encourage America's patients to incorporate physical activity and exercise into their daily lives (Sallis, 2009). The "exercise is medicine" initiative calls on healthcare providers to assess and review every patient's physical activity program at every visit. Participation in physical activity is correlated with improvements in chronic diseases, such as cardiovascular conditions, diabetes, and a decreased risk for some cancers (USDHHS, 2008). Physical activity also increases mobility and improves overall quality of life (Effing, Meeteren, Asbeck & Prevo, 2006). Physical activity can be viewed as a cost effective supplement to medical treatments and is responsible for improved health and overall quality of life (Lorraine, Hammock & Blanton, 2005).

Although the health benefits of physical activity are well documented, physical activity participation levels remain low in the United States. In 2009, according to the Behavioral Risk Factor Surveillance System (BRFSS), only 49.4% of adults met the physical

activity recommendations. More recently, 64.5% of U.S citizens were reported as being physically active, while 25.4% reported no leisure-time physical activity (Center for Disease Control and Prevention, 2009). Actual physical activity rates may even be lower. For example, compared to survey data, measuring physical activity objectively with an accelerometer revealed less than 5% of individuals met physical activity guidelines (Troiano, Berrigan, Dodd, Masse, Tilert & McDowell, 2008).

PA counseling by nurses has also been found to be under-utilized. Burns, Camaione, & Chatterton (2000), for example, reported less than half of nurse practitioners (49.7%) counseled patients regarding active lifestyles. Similarly, in a cross-sectional study evaluating the health promotion attitudes of 727 Texas nurses, Reeve and colleagues (2004) reported only 58% of nurse practitioners provided PA counseling to their patients. The failure of nurses to counsel their patients to be more physically active presents missed opportunities to promote healthy lifestyles.

Little attention has been given to PA counseling by RNs who work in a hospital setting. One exception is a study of RNs working in Pennsylvania hospitals where only 40% of the RNs reported counseling their patients regarding physical activity (Ingle, 2013). The low PA counseling rates suggest a need for a better understanding of the reasons why some hospital RNs engage in health promoting practices and others do not. The main purpose of this study is to identify the percentage of RNs who provide PA counseling to their patients and to explore the factors which contribute to their decisions to provide PA counseling. A better understanding of the characteristics associated with RNs who include PA counseling as part of the patient discharge process could help us develop strategies to improve the PA counseling rates among RNs.

Potential Predictors of Nurse-led PA Counseling

Changing health behaviors is not an easy task for nurses. Decisions whether to provide PA counseling may be inhibited by a lack of training in the nursing curriculum with respect to how to communicate healthy lifestyle choices (Buss, 2012). Miller, Alpert and Cross, (2007), for example, found only 71% of the RNs reported that patient education was part of their professional role, although 76% of the respondents reported the need for continuing education regarding health implications of overweight and obesity. When Miller, Alpert & Cross (2008) asked RNs to list five unhealthy implications of obesity only 41% were able to name five implications: 96% reported cardiovascular disease as a health consequence related to obesity, however 26% did not identify diabetes and 90% did not label high cholesterol as health implications.

Many health professionals, nurses included, are simply not exposed to undergraduate or nursing curricular content concerning the importance of regular physical activity and related strategies to get people to be more physically active. The National Council of State Boards of Nursing (NCLEX, 2013), the governing body which provides certification testing to all LPN and RN's, includes only 8% of questions focused on health promotion. More importantly with respect to promoting physical activity, the NCLEX does not specifically identify physical activity as a testable topic.

Research studies have shown the majority of adults expect advice from the healthcare system regarding lifestyle choices (Peterson, 2007; Sallis, 2009). Current trends in PA counseling, however, show only 1 in 3 persons who visit a healthcare professional are given some form of physical activity advice (Barnes & Schoenborn, 2012). Surveys of primary care physicians typically report the lack of time as the most significant barrier to

providing physical activity advice. RNs, rather than physicians, have been suggested to be better suited to provide PA counseling due to their ability to spend more time with their patients (Tulloch, Fortier & Hogg, 2006). According to Peterson (2007), the implementation of a brief physical activity counseling intervention is a promising method to improve physical activity among patients and RNs are in the best position to deliver these messages in a succinct well-planned session. Effective PA counseling can be performed with as little as a brief 3 to 10 minute intervention (Eakin, Glascow & Riley, 2000). Unfortunately, RNs also face time challenges which may impact their decisions to provide PA counseling. For example, Puig Ribera and colleagues (2005) reported lack of time as one of the major deterrents to PA counseling.

Several studies suggest the failure of nurses to provide PA counseling may directly be related to the nurses' inability to adopt healthy behaviors in their own lives (Esposito & Joyce, 2011). Nurses are more likely to be overweight and obese than the general population (Boss, 2012). Tucker and colleagues (2010) reported 53% of surveyed nurses were overweight and 23% were obese. Similar findings in Illinois and North Carolina revealed 55% of RNs were either obese or overweight (Han, Trinkoff, Storr & Geiger-Brown, 2011).

The Nurses' Health Study is among the largest and longest running investigation of factors that influence women's health. Started in 1976 and expanded in 1989, the information provided by more than 200,000 RNs has led to many insights on health and disease. Manson and colleagues (1999) using The Nurses' Health Study reported a significant inverse association between RNs physical activity levels and the risk of coronary events.

Many nurses also fail to include an adequate level of physical activity into their own lives. Zapka and colleagues (2009), in their study of 405 RNs, reported the majority did not walk for leisure or engage in other forms of regular physical activity. The failure of RNs to include healthy habits in their own lives may guide decisions not to focus on the lifestyle habits of their patients.

The low levels of physical activity among RNs may be a result of barriers to engaging in physical activity. RNs are not immune from the commonly reported barriers to physical activity faced by the general population. The CDC (2011) reports the leading causes of physical inactivity are: 1) having enough time to exercise, 2) finding it inconvenient to exercise and 3) lacking self-motivation. Sveinsdottir and Gunnarsottir (2008) reported 27.1% of nurses in their study reported lack of exercise was due to lack of time and exhaustion. Malik, Blake and Batt (2011), in a study of 876 nurses also reported two-thirds of the nurses indicated lack of time for physical activity. Nearly 40 percent reported being too exhausted to participate in physical activity, while nearly one-third reported lack of monetary funds and motivation contributed to difficulties in staying physically active.

RNs face barriers to physical activities that are unique to their profession (Castillo-Retamal & Hinckson, 2011; McKinley, 2011). RNs provide 24 hour care for patients who are hospitalized (U.S Department of Labor, Bureau of Labor Statistics, 2010). Many have stressful jobs and experience burnout and disillusionment (Zapka, Lemon, Mager & Hale, 2009) RNs are expected to work differentiating shifts, ranging from normal business hours to swing shifts and night shifts. Nurses who work night shifts have reported higher levels of stress in comparison to nurses who work primarily days (Piko, 1999). Night shift work in particular results in increased fatigue, decreased alertness and reduced productivity

(Fitzpatrick, While, & Roberts, 1999). Night shift nurses may also be handicapped in regards to traditional educational and training opportunities that may be provided for those who work traditional hours (Campbell Nilsson & Pilhammar, 2004).

The nursing profession is dominated by women many who have entered the workforce with children (Fox & Dwyer 1999). More than 3 million RNs are licensed within the United States and more than half of them report childhood, spousal or household responsibilities (Tucker et. al., 2011). Addressing responsibilities at home and maintaining family relationships are time-consuming and women who are forced to balance family life with a full-time career may not have the ability to adopt or promote healthy lifestyles that include physical activity (Grzywacz & Carlson, 2007).

Few studies have examined the role of RNs in promoting physical activity. It makes sense that nurses who regularly engage in physical activity should be more likely to educate patients regarding the importance of physical activity. Esposito and Fitzpatrick's (2011) study of 112 RNs found those who practiced active lifestyles were more likely to counsel patients regarding the benefits of physical activity. The Esposito and Fitzpatrick (2011) study of RNs examined the perceived benefits of exercise. Using the benefits portion of the Exercise Benefits and Barriers scale developed by Seichrist and colleagues (1987), the authors concluded RNs who believed in the benefits of physical activity and embraced healthy lifestyles were more likely to be positive role models and teach healthy behaviors to their patients. The present study attempts to extend the work of Esposito and Fitzpatrick to address the question of whether perceiving barriers to physical activity contribute to RNs decisions whether or not to provide PA counseling.

The purposes of this study are threefold: a) to identify the extent to which RNs

provide PA counseling to their patients, b) to determine if type of perceived barriers to physical activity contribute to whether RNs provide PA counseling and c) to determine if RNs who are physically active provide PA counseling to their patients more than their sedentary counterparts.

The following hypotheses were tested in this study:

1. RNs who report lower levels of perceived barriers to being physically active are more likely to provide PA counseling than those who report higher levels of perceived barriers to being physically active.
2. RN's who report higher levels of light, moderate, and vigorous physical activity are more likely to provide PA counseling than those who report lower levels of light, moderate, and vigorous physical activity.

Methods

A web-based survey was used to gather information regarding physical activity levels, perceived barriers to physical activity, and nurses' decisions to provide PA counseling to their patients. Hospitals were targeted as the source of participant recruitment and contacted either by phone or through e-mail. Eight hospitals were contacted and five agreed to participate. Three of the hospitals were for-profit medical centers and two were nonprofit medical centers. Two hospitals were located in large cities (population 500,000 or greater) and three hospitals were located in smaller cities (population 100,00 or less). Chief nursing officers were the primary point of contact within hospitals and were responsible for disseminating the survey to potential participants through an anonymous online web-link in the hospital. Hospitals that requested paper

surveys were given copies of the online survey to distribute to potential participants. The five hospitals were recruited from four states (Kansas, Missouri, New Mexico & Arizona).

Using the Kansas State University Qualtrics program an online survey was created and distributed to the recruited hospitals. Each hospital was provided with the Qualtrics website that linked directly to the survey. Hospitals distributed the survey through mass e-mails to all Licensed Practical Nurses (LPNs) and RNs within the hospital system. Data collection started September 28th 2013 and ended January 1st 2014. Chief nursing officers were asked to provide a follow up e-mail two weeks prior to the survey deadline to remind participants who had not participated to complete the survey. Due to hospital organizations wishing to keep employee information confidential and to ensure anonymous reporting, no e-mail addresses were collected. Some hospitals requested paper surveys due to the inability to distribute online surveys through the hospitals Internet systems. Nineteen hundred and seventy-five hospitals employees were contacted.

Criteria to participate in the study required an individual to be a LPN or RN within their respective state and actively employed within the hospital organization. Each nurse surveyed was given an anonymous number and reordered in a group response to eliminate affiliation with hospital organizations. The approximate time to complete the survey was 10 minutes. The Institutional Review Board at Kansas State University approved the study prior to any recruitment or data collection. The survey can be found in Appendix A.

Measures

Demographic data including age, education and gender as well as information regarding nursing employment (years worked in nursing, and degrees completed) were obtained. PA education in nursing school was determined by the question "I have received physical activity education during nursing school, PA education through continuing education was determined by the question "I have received physical activity education through continuing education courses." Participants responded using a yes/no answer. Current physical activity was defined as follows: "Exercise is a planned activity to increase or maintain physical fitness and overall health. Exercise includes: walking briskly, jogging, cycling, swimming, or any other activity in which the effort is at least as intense as these activities. Physical activity was determined for the following categories: of exercise performed for 30 minutes a) 0-1 days per week b) 2 days a week c) 3 days a week d) 4 days a week 5) 5+ days per week. Level of physical activity was determined for the following three categories: light physical activity (e.g. walking, golfing, yoga), moderate physical activity (e.g. tennis, golf without a cart, softball or walking at a brisk pace) and vigorous physical activity (e.g. jogging, swimming, cycling greater than 10 MPH). Physical activity variables used a 5-point scale ranging from never (0) to participating in 4 or more hours per day. Night shift work was evaluated through weekly hours worked during the night, primary shift schedule, and rotating shift work. Perceived barriers to being physically active were evaluated using the barriers variables found in the Exercise Benefits/Barriers Scale (Sechrist, Walker & Pender 1987).

The following thirteen barriers to being physically active were coded using a 4-point scale ranging from strongly agree (4) to strongly disagree (1):

1. Exercising takes too much of my time
2. Exercise tires me
3. Places for me to exercise are too far away
4. I am too embarrassed to exercise
5. It costs too much to exercise
6. Exercise facilities do not have convenient schedules for me
7. I am fatigued by exercise
8. My partner (or significant other) does not encourage me to exercise
9. Exercise takes too much time from family relationships
10. I think people in exercise clothes look funny
11. My family members do not encourage me to exercise
12. Exercise takes too much time from my family responsibilities,
13. Exercise is hard work for me,
14. There are too few places for me to exercise.

The Composite Barrier Score was created by summing the thirteen individual barriers to being physically active variables.

PA counseling was based on the five stages of change model (Prochaska, Prochaska & DiClemente (1991) and determined from responses adapted from McDowell, McKenna & Naylor(1997). The responses were:

-I don't promote physical activity and I don't intend to start **Precontemplation**

-I don't promote physical activity but I'm thinking of starting **Contemplation**

-I promote physical activity sometimes but not regularly **Preparation**

-I promote physical activity regularly but just started recently **Action**

-I promote physical activity regularly (for longer than 6 months) **Maintenance**

-I have promoted physical activity in the past but not now **Termination**

PA counseling was operationalized as the answer yes to either:

-I promote physical activity regularly but just started recently

-I promote physical activity regularly (for longer than 6 months)

Yes responses to the following statements were categorized as no PA counseling.

-I don't promote physical activity and I don't intend to start

-I don't promote physical activity but I'm thinking of starting

-I promote physical activity sometimes but not regularly

-I have promoted physical activity in the past but not now

Statistical Analysis

Descriptive statistics were used to summarize demographic and key physical activity characteristics of the study sample. Means, standard deviations and independent t-tests were used to test the two study hypotheses.

Results

A total of 431 surveys were completed and 323 surveys were used in this study. Forty-five respondents were excluded in this study because they did not have direct patient care responsibilities or did not work in the traditional capacity of a RN and 63 respondents did not complete at least 90% of the survey. Table 1 summarizes the demographic and physical activity characteristics of the sample used in this study. The majority of RNs

(91.6%) in this study was female and this number is consistent with the national average of 90.4% women making up the nursing workforce (USDHHS 2010). More than half (56.0%) of the RNs completed the Bachelor of Science in nursing reflecting a higher percentage than the national average of 36.8%. The ages of the RNs were somewhat evenly distributed, although, nearly half of the RNs reported 10+ years of nursing experience. The USDHHS (2010) reported 84.5% of all nurses under the age of 30 worked in a hospital setting, while only 53-55.9% of all nurses ages 50-59 were employed in a hospital setting. The median age for nurses on a national level is 46 years old.

Slightly more than half (51.7%) of the RNs reported receiving physical activity education while in nursing schools and only 36.5% reported receiving physical activity education during their continuing education. The American Association of Colleges of Nursing (1998) strongly recommends nurses have knowledge on health promotion, risk reduction and disease prevention. Only half of the RNs reported receiving physical activity education in nursing school, with an even lower population reporting continuing education suggest more can be done in the area of training nurses with respect to PA counseling. Nearly two-thirds (65.3%) of the RNs reported working day shifts. The National Health Interview Survey (NHIS) reported that 29% of all U.S workers worked an alternative shift, or not the standard day shift (Alterman, Luckhaupt, Dalhamer, Ward, & Calvert, 2013). When compared to the national average, our survey respondents (34.7% nurses reporting night/shift work) exceeded the national average for evening and night shift work.

Table 1 also summarizes current physical activity levels for the RNs in the study. Overall, this sample of RNs report relatively low levels of current physical activity. Only 28% of the RNs reported participating in physical activity 4 days or more per week with

only 16% reported 5+ days per week, the category that best reflects current physical activity guidelines (USHHDS, 2008). More than half of the RNs reported only 0 -1 day or 2 days of physical activity per week.

Table 1: Sample Characteristics (n=323)

Age:	**N**	**%**	**Gender**	**N**	**%**
20-29 years old:	73	22.6	Male	25	7.7
30-39 years old	84	26.0	Female	296	91.6
40-49 years old	75	23.2			
50-59 years old	64	19.8			
60+ years old	25	7.7			

Degree Completed	**N**	**%**	**Years worked in nursing**	**N**	**%**
LPN	44	13.6	0-1 years	11	3.4
ADN	78	24.1	1-5 years	90	27.9
BSN	181	56.0	5-10 years	68	21.1
Diploma	20	5.9	10+ years	153	47.4

PA ed. in nursing school	**N**	**%**	**PA/ Cont. Ed.**	**N**	**%**
Yes	167	51.7	Yes	118	36.5
No	155	48.0	No	199	61.6

Shift worked	**N**	**%**	**Current physical activity**	**N**	**%**
Days	211	65.3	0-1 days per week:	108	33.4
Nights	108	33.4	2 days per week:	59	18.3
			3 days per week:	65	20.1
			4 days per week:	37	11.5
			5+ days per week:	53	16.4

Table 2 summarizes the frequency distributions for the six categories of stages of change. PA counseling was determined by responses which placed the RNs at the action stage (I promote PA regularly but just started recently), or the maintenance stage (I promote PA regularly (longer than 6 months). Fifty-seven percent or 187 respondents reported providing PA counseling.

Table 2. Stages of Change and PA counseling Categories

Statement:	***Stage***	***Frequency***	***Percentage***
I don't promote PA and don't intend to start	Precontemplation	15	4.6
I don't promote PA but I'm thinking of starting	Contemplation	10	3.1
I promote PA sometimes but not regularly	Preparation	98	30.3
I promote PA regularly but just started recently	Action	23	7.1
I promote PA regularly (for longer than 6 months)	Maintenance	164	50.8
I have promote PA in the past but not now	Relapse	10	3.1

Table 3 presents a summary of the 13 perceived barriers to being physically active, the percentage of RNs who identified each one as a barrier to being physically active (agree, strongly agree) or not as a barrier to being physically active (disagree strongly agree). RNs reported an average of 3.3 barriers to being physically active. Fifty-nine percent (18.3%) reported no barriers to being physically active. Only two nurses (0.6%) reported all 13 barriers. The number of total barriers reported ranged between 1 and 8 (n=236).

Three of the five most frequently reported barriers to being physically active had to do with family. More than 36 % of the RNs reported "exercise takes too much time from my family responsibilities" and represents the most frequently cited barrier. RNs also reported "exercise takes too much time from my family relationships" (30.7%) and "my partner does not encourage me to exercise" (30.3%). Barriers related to fatigue "exercise tires me" (36.2%) and facility hours "facilities have inconvenient schedules" (32.8%) were also among the highest reported barriers. More than 28% of the RNs reported "exercise takes too much time" as a barrier to their exercise participation. Barriers related to exercise clothing "exercise clothes look funny" (11.1%) and the difficulty of exercise, "exercise is too difficult for me" "(5.6%) were the lowest reported barriers.

Table 3: Percentage of Nurses Who Report Perceived Barriers to Physical Activity

Perceived Barrier (EBBS)	(strongly agree, agree)	(disagree, strongly disagree)
Exercise takes too much time from my family responsibilities	36.8%(119)	62.8%(203)
Exercise Tires me	36.2%(117)	63.8%(206)
Facilities have inconvenient schedules	32.8%(106)	67.2%(217)
Exercise takes too much time from family relationships	30.7%(99)	69.3%(224)
My partner doesn't encourage me to exercise	30.3%(98)	69.3%(224)
Places to exercise are too far away	28.8%(93)	71.2%(230)
My family doesn't encourage me to exercise	28.8%(93)	70.9%(229)
Exercise takes too much time	28.2%(91)	71.8%(232)
It costs too much to exercise	26.9%(87)	72.8%)(35)
There are too few places to exercise	22.6%(73)	76.8%(248)
I'm too embarrassed to exercise	17.3%(56)	82.4%(266)
Exercise is too hard for me	11.1%(36)	88.9%(287)
Exercise clothes looks funny	5.6%(18)	94.4%(305)

Note: Percentages do not add to 100% due to a small number of missing values

Table 4 presents the means for the Composite Barrier Score and for each of the thirteen perceived barriers to being physically active for the two PA counseling groups. RNs who provided PA counseling reported a lower Composite Barrier Score (M=24.8, SD=6.71), $t(287) = 5.0$ $p<.05$, than those who did not provide PA counseling (M=28.5, SD=6.41). Statistically significant mean differences were also reported for 10 of the 13 barriers (See table). Several of perceived barriers related to family commitments demonstrated differences regarding PA counseling. The family barriers include "my partner doesn't encourage me to exercise," "my family doesn't encourage me to exercise," emerged as important to distinguishing between those who provided PA

counseling and those who did not. Most notably, higher level of the perceived barrier "exercise takes too much of my time" also distinguished between those who provided PA counseling and those who did not. No mean differences were found for three personal barriers, "I'm too embarrassed to exercise, It cost too much to exercise," and "facilities have inconvenient schedules." These findings indicate support for Hypothesis 1, that is, RNs who report lower levels of perceived barriers to being physically active are more likely to provide PA counseling than those who report higher levels of perceived barriers to being physically active.

Table 4: Perceived Barriers to Physical Activity and PA counseling.

Perceived Barrier	RNs who Counsel PA Mean (SD)	RNs who do not counsel PA Mean (SD)	t Test
Composite Barrier Score	24.8(6.71)	28.5(6.41)	5.00*
Exercise Takes too much time	1.97(.758)	2.29(.726)	3.815*
Exercise Tires me	2.07(.762)	2.43(.688)	4.396*
Places to Exercise are too far away	1.98(.845)	2.26(.787)	3.032*
I'm too embarrassed to exercise	1.76(.792)	1.91(.081)	1.776
It costs too much to exercise	1.95(.900)	2.13(.839)	1.794
Facilities have inconvenient schedules	2.12(.902)	2.31(.845)	1.933
My partner doesn't encourage me to exercise	1.90(.856)	2.37(.960)	4.477*
Exercise takes too much time from family relationships	2.04(.815)	2.33(.785)	3.182*
Exercise clothes looks funny	1.51(.599)	1.71(.635)	2.857*
My family doesn't encourage me to exercise	1.88(.795)	2.32(.876)	4.545*
Exercise takes too much time from my family responsibilities	2.09(.878)	2.44(.810)	3.673*
Exercise is too hard for me	1.64(.600)	1.98(.674)	4.696*
There are too few places to exercise	1.88(.757)	2.13(.811)	2.751

** Denotes statistically significant p <.05. Promotes PA counseling n=187; Does Not Promote PA counseling n= 133*

Table 5 displays the mean differences for the three physical activity variables and PA counseling. PA counseling was higher for light physical activity, (M=3.17, SD=1.176), $t(285) = 3.45$ $p<.05$, moderate physical activity, (M=2.13, SD=.885), $t(300) = 4.72$ $p<.05$ and vigorous physical activity, (M=1.8, SD=2.13), $t(305) = 3.34$ $p<.05$. These results indicate support for Hypothesis 2, that is, RN's who report higher levels of light, moderate, and vigorous physical activity are more likely to provide PA counseling than those who report lower levels of light, moderate, and vigorous physical activity.

Table 5: PA Counseling by Physical Activity Levels

Physical Activity	Nurses who counsel PA	Nurses who don't counsel PA	
	Mean (SD)	**Mean (SD)**	**t Test**
Light Physical Activity	3.17(1.176)	2.72(1.139)	3.455*
Moderate Physical Activity	2.13(.885)	1.69(.775)	4.712*
Vigorous Physical Activity	1.80(2.13)	1.50(1.69)	3.344*

** Denotes statistically significant p < .05 Promotes PA counseling n=187; Does Not Promote PA counseling n= 133*

In sum, the results of this analysis supported the two main hypotheses of this study. RNs who were less likely to report barriers to being physically active and who engaged in higher levels of light, moderate and vigorous physical activity were more likely to provide PA counseling in discussions with hospital patients.

Discussion

The purpose of this study was to examine if RNs who report lower levels of personal barriers to being physically active as well as report higher levels of physical activity are more likely to provide PA counseling to their patients before hospital discharge. The first hypothesis, RNs who report personal barriers to physical activity would be less likely to provide PA counseling physical activity to their patients received overall support. Personal barriers related to family, fatigue, and exercise facility schedules were reported most often. These barriers to physical activity are similar to those reported by Blake, Malik, Mo and Pisano (2011) who identified barriers of not having time to be physically active (70.6%), the cost of participation (57.4%) and feeling tired (48.5%) as most crucial to maintaining a physical activity program. These findings have relevance for health promotion efforts directed at RNs. Chinn and colleagues (1999) reported that individuals who cite only external barriers to physical activity such as lack of money and access to transport are more likely to change exercise behavior than those reporting factors related to lack of time.

The second hypothesis, participation in higher levels of light, moderate and vigorous physical activity would provide higher levels of PA counseling was supported for all three physical activity variables. These findings are consistent with the results of McDowell, Mckenna and Taylor (1997) who found nurses who engaged in regular exercise were more likely to encourage physical activity as a treatment than nurses who engage in no or little routine physical activity. For example, Zhu, Norman & While (2011) reported that normal weight nurses were more likely to promote obesity prevention and to provide general advice regarding weight loss. It appears that RNs who are physically active themselves may perceive system barriers as having less limiting effects on their ability to

provide PA counseling. Our results indicate that strategies designed to improve the rates of PA counseling to patients need to seriously consider efforts to improve physical activity levels among those delivering the health messages, in this case the RNs.

The present sample of RNs reported relatively low levels of current physical activity. These findings are consistent with low reported physical activity levels in other studies of RNs (Esposito & Fitzpatrick, 2011; Ingle, 2013; Zapka, Lemon, Magner & Hale, 2009) and speak to the failure of many adults to meet minimum recommended standards for physical activity. The current physical activity guidelines for Americans set forth by the U.S. Department of Health and Human Services (2008) recommend adults get at least 150 minutes a week of physical activity and include at least two days of resistance or strength training. Although minutes of participation were not measured in this study, (only days of the week) the large percentage RNs reporting two days or less of physical activity suggest that many RNs are failing to meet minimum physical activity guidelines.

Nearly six out of ten RNs in our study reported providing PA counseling to their patients. Our findings are consistent with Reeve, Byrd and Quil (2004) who reported a similar level of PA counseling among nurse practitioners. The PA counseling rates in the present study, however, are significantly higher than those found by Miller, Alpert and Cross (2008) who reported only 24% of 760 surveyed nurses discussed physical activity topics with their patients.

The 60% of the RNs reporting regular PA counseling means 40% did not and leaves a large gap in the exercise is medicine initiative set forth by the American College of Sports Medicine and the American Medical Association more than five years ago. Many nurses hold negative stereotypes and attitudes in regards to obesity (Hoppe & Ogden 1997, Brown

& Thompson 2007, Brown, Stride, Psarou, Brewins & Thompson, 2007) and report that the care of obese individuals is stressful and physically demanding (Drake, Dutton, Engelke, McAuliffe & Rose, 2005). Nurses may face the same biases toward those who are sedentary. Miller, Alpert and Cross (2008) reported that 93% of 760 surveyed nurses acknowledged the importance of discussing interventions targeting obesity. Although a significant percentage understood obesity prevention and education which includes promoting physical activity, 76% reported that they did not routinely discuss the topics with their patients.

The PA counseling rates found in this study were likely buoyed by a large number of RNs who reported receiving physical activity as part of their nursing school curriculum. Presumably this training, although not directly addressed in this study, has a bearing on RNs attitudes and confidence and, subsequently, their decisions to provide PA counseling to their patients (Bucholz & Purah, 2007). Nevertheless, our findings provide a strong argument for the continued and increased inclusion of physical activity topics in the academic training of nurses.

The current study provides several strengths over previously conducted studies. For example, the survey response in this study was much larger than previous studies. Our survey response was almost triple of the Esposito & Fitzpatrick (2011) study. The 323 surveys used in this study represents a 21.8% response rate which may suggest that it may be difficult to generalize our findings to the population of RNs as a whole. However, the response rate in our study is higher than the 5.6% response rate reported by Esposito and Fitzpatrick (2011). Nevertheless, future studies should consider creative strategies to increase the response rate from hospital-based employees. The inclusion of more than 300

RNs and five hospital sites in four states may not provide a national representation of nurses but it is a step in the right direction. The evaluation of multiple hospitals allowed for a variety of hospitals with potentially different policies.

The current study, however, does present several limitations. The cross-sectional design of this study only identified relationships among the variables and does not allow inferring causality. In other words, the finding that RNs who practice PA counseling tend to be more physically active does not mean that increasing physical activity levels among nurses will result in increases in PA counseling. Studies that incorporate pre-post intervention designs are the only way to truly uncover the full impact of the importance of participating in physical activity in subsequent increases in PA counseling.

A second weakness rests in the fact that this study did not address whether RNs were actually providing concise, accurate and specific PA counseling to their patients. RNs were surveyed on whether they provided PA counseling with no attention given to the type, quality or frequency of the counseling. Although any form of PA counseling perhaps may be viewed as beneficial when compared to none at all, appropriate PA counseling tailored to the individual patient and their health status should increase overall benefits from being physically active and increase adherence to a PA regimen. Future attention to the effectiveness of PA counseling is critical to optimizing the role of RNs in promoting physical activity in the hospital setting. Physical activity interventions in health care settings focus on changing sedentary behavior to active behavior and follow-up periods are needed to evaluate which strategies best encourage the maintenance of physical activity. Long term interventions may be more feasible if the larger health care system provides support for initiation and maintenance of these programs.

The findings of this study may also be limited by the focus on the views of RNs only as there was no attention given to the viewpoints of patients. Chinn and colleagues (1999) found patients with a higher education level, higher income, and patients who regularly exercise were more likely to listen to their health practitioner. Chinn and colleagues (1999) also reported that behavioral counseling is more likely provided to patients whose health is already compromised. Patients who are checking out of a hospital based setting are dealing with some form of health compromising situation and are not there for primary health prevention purposes. On the other hand, PA counseling may be underutilized by RNs who view patient health conditions not directly tied to physical activity benefits. Patient characteristics such as health and disease status, age, previous physical activity experiences are important to the evaluation of what PA counseling techniques provided by RNs may be effective.

Finally, the measurement of physical activity levels by the use of self-report measures may not have accurately addressed the actual physical activity levels. As with all self-reports of lifestyle behaviors responses may reflect recall error or social desirability bias. Although RNs were given options, (examples of intensities and types of physical activity levels), some still may have had difficulty in accurately assessing their levels of physical activity.

This study signals the need for the development of policies and interventions designed to reduce personal barriers to physical activity and increase physical activity levels among one of the nation's most overworked health professionals, RNs. Although many approaches to promote physical activity among RNs emphasize an individual focus, system level strategies are crucial to the establishment of on-going effectiveness. Policy

strategies that consider flexible schedules to promote walking on breaks, or provide access and information to onsite fitness center that offer exercise equipment and classes before and after shifts and collaborative efforts with local fitness facilities such as discounts for hospital workers are just a few examples to improve physical activity among hospital-based nurses.

Conclusion

RNs are one of the many health professionals who find themselves on the forefront of encouraging others to take responsibility for their own health behaviors. The results of this study revealed that RNs who are physically active and reported fewer barriers to physical activity were more likely to provide PA counseling to their patients before discharge from the hospital. Although in need of additional replication with larger samples and more precise measure of physical activity and PA counseling, the findings in this study suggest that RNs can serve as positive role models through both patient education and self-practicing habits. It must be cautioned that the findings in this study are based on descriptive data and intervention driven research designs are needed to extrapolate the effectiveness of RN delivered PA counseling in hospitals settings. The results of this study, however, are suggestive that it is important for RNs to be physically active not only to benefit their own health but so that they can best help others.

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APPENDIX A

Patient education physical activity by RN's

Dear Participant, On behalf of Kansas State Universities Department of Kinesiology, I want to express my gratitude for your participation in this on-line survey. This survey is intended to evaluate the role nurse professionals play in providing physical activity education to patients within the hospital setting. This survey will also ask you to identify ways in which you promote physical activity you have participated in. This survey should take about 10-15 minutes to complete. Your participation in this study is completely voluntary. All of your responses will remain anonymous which means no identifying material (phone numbers, e-mails) will be gathered or associated with your responses. Please read each question carefully. There are no right or wrong answers.

Section A: About your physical activity

1. Please check the box which describes how often you do the following activities on average everyday. *

	Never	Less than 1 hour/day	1 but less than 2 hours /day	2-4 hours/day	More than 4 hours/day
Light exercise i.e. walking, light cycling on an exercise bike, lawn bowls, bowling, water aerobics, golf with a cart, yoga, tai chi, fishing or other similar activities	○	○	○	○	○
Moderate exercise i.e. double tennis, ballroom dancing, golf without a cart, softball or similar activities	○	○	○	○	○
Strength exercise i.e. jogging, swimming, cycling, singles tennis, aerobic dance or other similar activities	○	○	○	○	○
Light housework i.e. dusting or washing dishes	○	○	○	○	○
Heavy housework i.e. vacuuming, scrubbing floors, cleaning windows	○	○	○	○	○
Light gardening i.e. pruning or watering	○	○	○	○	○
Heavy gardening i.e. digging, shoveling earth or leaves, wood chopping	○	○	○	○	○
Caring for another person such as a dependent child, dependent spouse or a dependent friend outside	○	○	○	○	○

	Never	Less than 1 hour/day	1 but less than 2 hours /day	2-4 hours/day	More than 4 hours/day
work					
Sitting activities such as reading or watching TV	○	○	○	○	○
Walking outside your home or garden. （for any reason such as fun, exercise, walking the dog, shopping etc）.	○	○	○	○	○

2. How many flights of stairs do you climb up, on average, every day? *

- ○ None
- ○ Less than 1 flight/day
- ○ 1 but less than 2 flights/day
- ○ 2-4 flights/day
- ○ More than 4 flights/day

3. In the past month, on average, how many hours per week did you work as a nurse? *

- ○ None
- ○ 1-20 hours per week
- ○ 21-40 hours per week
- ○ 41+ hours per week

4. In the past year, what schedule did you usually work as a nurse? *

- ○ Days only
- ○ Nights only
- ○ Rotating with nights
- ○ Rotating – no nights
- ○ Other/didn't work

5. In the past month, on average, how often did you work night shifts? Night shift is most of work hours falling between midnight and 8am. *

- ○ 1-2 night shifts per month
- ○ 3-4 night shifts per month

- 2-3 night shifts per week
- 4+ night shifts per week
- None

6. In the past month, on average, how many hours per day were you on your feet (standing or walking) at work? *

- 0 or less than 1 hr/day
- 1-4 hrs/day
- 5-8 hrs/day
- 9+ hrs/day

7. In the past month, on average, how many times per day did you lift or move a patient or heavy equipment at work? Include repositioning or transferring patients. *

- None
- 1-5 times/day
- 6-15 times/day
- 16+ times/day

8**. Please check the box which applies to your current physical activity: *a) Physical activity or exercise includes activities such as walking briskly, jogging, cycling, swimming, or any other activity in which the exertion is at least as intense as these activities**.

	0-1 days per week	2 days per week	3 days per week	4 days per week	5+ days per week
I currently exercise at least 30 minutes per day:					

9. Below are statements that relate to ideas about exercise. Please check in the box which best describes your view.*This is from EBBS

	Strongly agree	agree	Disagree	Strongly disagree
Exercising takes too much of my time.				
Exercise tires me.				
Places for me to exercise are too				

	Strongly agree	agree	Disagree	Strongly disagree
far away.				
I am too embarrassed to exercise.				
It costs too much to exercise.				
Exercise facilities do not have convenient schedules for me.				
I am fatigued by exercise.				
My partner (or significant other) does not encourage exercising.				
Exercise takes too much time from family relationships.				
I think people in exercise clothes look funny.				
My family members do not encourage me to exercise.				
Exercise takes too much time from my family responsibilities.				
Exercise is hard work for me.				
There are too few places for me to exercise.				

Section B: About your nursing practice

10. Which one of the following statements best describes your current practice with your patients? Please check only one box. *Statement

- I don't promote physical activity and I don't intend to start
- I don't promote physical activity but I'm thinking of starting
- I promote physical activity sometimes but not regularly
- I promote physical activity regularly but just started recently

- ☐ I promote physical activity regularly (for longer than 6 months)
- ☐ I have promoted physical activity in the past but not now

11. To what extent do you agree or disagree with the following statements? Please check in the box which best describes your view. *

	Strongly agree	agree	Disagree	Strongly disagree
I try to encourage as many patients as possible to increase their physical activity.	○	○	○	○
I seldom evaluate my patients on their physical activity.	○	○	○	○
I only advise patients about physical activity if it is linked to their presenting problem.	○	○	○	○
I only discuss physical activity if the patient mentions it.	○	○	○	○

12. Below are statements that relate to attitudes to physical activity promotion. Please check in the box which best describes your view. *

	Strongly agree	Agree	Disagree	Strongly disagree
I have sufficient knowledge to advise patients about physical activity	○	○	○	○
I feel confident in giving general advice to patients on physical activity	○	○	○	○
I feel confident in suggesting specific physical activity programs for my patients	○	○	○	○
Discussing the benefits of physical activity with patients is part of the nurse's role	○	○	○	○

	Strongly agree	Agree	Disagree	Strongly disagree
Suggesting to patients ways to increase daily physical activity is part of the nurse's role				
I can be effective in persuading some patients to increase physical activity				
Any amount of physical activity is beneficial to health				
Only vigorous/strenuous activity is beneficial to health				
Nurses should be physically active to act as a role model for their patients				

13. Below are statements of barriers to physical activity promotion. Please check in the box which best describes your view. *

	Strongly agree	agree	Disagree	Strongly disagree
Patients are unlikely to be motivated to follow advice to be more active				
I don't have enough time to promote physical activity to my patients				
I would be more likely to promote physical activity if there was a financial incentive				
Educational materials for patients are insufficient				

	Strongly agree	agree	Disagree	Strongly disagree
Patients expect drug treatments for their health problems	○	○	○	○
There is a lack of available education for health professional regarding physical activity promotion	○	○	○	○

Section C: About yourself

14. What is your age? *

- ○ 20-29 yrs
- ○ 30-39 yrs
- ○ 40-49 yrs
- ○ 50-59 yrs
- ○ 60 yrs or older

15. What is your gender? *

- ○ Male
- ○ Female

16. What is your highest educational qualification?

- ○ Associates Degree In Nursing
- ○ Bachelors of Science in Nursing
- Other (Please fill in the blank)

17. How long have you practiced as a Registered Nurse?

- ○ 0-1 Years

- 1-5 Years
- 5-10 Years
- +10 Years

18. What department do you work in?

- Medical
- Surgical
- Mental Health
- Ambulatory Care
- Geriatrics
- Pediatrics
- Obstetrics/Women's Health
- Intensive Care/Intermediate Care/Telemetry
- Emergency Services/Acute Care
- Radiology/Nuclear Medicine/Imaging Services
- Other (Please Fill in the blank)

Thank you for participating in this survey. Your responses will help us learn more about physical activity education in a hospital setting. All of your responses will remain anonymous . If you have any questions or concerns please contact me at pws@k-state.edu