Exploring the Experience and Impact of Therapeutic Touch Treatments for Nurse Colleagues

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ABSTRACT

Background: Therapeutic Touch (TT) reduces anxiety and stress while improving comfort and well-being in persons receiving TT. Providers and recipients of TT benefit from treatments. Nurses provide care on oncology and respiratory units which is physically and emotionally demanding.

Research question: What is the experience and impact of providing and receiving Therapeutic Touch treatments on nurses working in oncology and respiratory nursing?

Specific Aims/Hypothesis: Hypothesis: Participants, who receive and offer TT interventions, will have
significantly lower cortisol level, decreased blood pressure and heart rate and reduced anxiety levels, and significantly improved comfort and well-being.

Specific Aims:

1. To test the efficacy of a TT intervention in influencing the level of stress, sense of comfort and well-being by:
    a. Comparing the physiologic stress markers of cortisol, heart rate, systolic and diastolic blood pressure levels and state anxiety levels (STAI) of nurses offering and receiving TT pre and post intervention,
    b. Comparing the comfort and well-being as measured with visual analog scales pre and post intervention.
2. To qualitatively understand the experiences of nurses providing and receiving Therapeutic Touch (TT) on inpatient oncology and respiratory care units.

Methodology: Nurses who are certified to do TT provided (TT) to work colleagues who were willing to receive a TT treatment. Before and after each treatment vital signs; a visual analog scale for level of comfort and wellbeing; Spielberger state-trait anxiety survey (STAI); and oral swab for cortisol levels were collected. After the treatments, nurses providing and receiving TT were asked to participate in focus groups

Analysis: Changes in heart rate, blood pressure, cortisol levels and perceived level of comfort and well-being were analyzed through a series of paired t-tests. Focus group data was transcribed and analyzed using content analysis.

Key Words: Therapeutic touch, anxiety, wellbeing, salivary cortisol

Throughout history, the use of touch has been a hallmark of nursing care. For example, a back rub before sleep is used regularly to promote relaxation and induce sleep. This strategy offered the nurse an opportunity to interact and connect with patients in a therapeutic and healing manner. A formal version of touch, called Therapeutic Touch (TT) is based on Roger's Science of Unitary Human Beings (1992), but different in that Krieger proposes the energy field of a person and the environment are two different entities, whereas Roger's describes them as being integral and inseparable from one another. TT is defined as an intervention derived from the laying on of hands. The hands help to transfer energy from a person serving as a healer to another person, to help or heal that individual (Krieger, 1993; Mulloney & Wells-Federman, 1996).

Krieger stated "during TT the healer acts as a human support system, [his or her] own health energy field providing the scaffolding to guide the re-patterning of the healee's weakened and disrupted energy flow. Such support is oriented toward stimulating the healee's own immunological system, for it is the healee who heals her or himself" (Krieger, 1993, p.13).

TT has been studied and used by nurses for over thirty-five years (Barron & Coakley, 2008, Coakley, 2001, (Heidt, 1979; Krieger, 1993; Macrae, 1987). TT has been studied in diverse settings with people experiencing various health conditions (Heidt, 1979, Krieger, Peper, & Ancoli 1979; Meehan, 1985; Parkes, 1985, Quinn, 1982; Turner, Clark, Gauthier, & Williams, 1998). Results of these investigations suggest TT successfully improves comfort, promotes relaxation, and reduces anxiety in the person receiving TT (Heidt, 1990; Quinn & Strelkauskas, 1993). Researchers have demonstrated both providers and recipients of TT benefit from the treatments (Coakley 2001; Heidt, 1990; Krieger, 1979). For example, Krieger (1979) reported that 250 healers in North America who practiced TT described the TT experience as having benefits for the practitioners as well as the recipients. Heidt (1990) used grounded theory to study the experience of TT for both practitioners and recipients. The findings of her investigation indicated that in many instances, the descriptive experiences of the patients during treatment paralleled those of the nurse.

Coakley (2001) found that both providers and recipients of TT described feeling more relaxed, more focused, and calmer following TT treatments. When one person interacts with another, there is an interaction of fields as they become interconnected with the other. When a nurse intentionally and purposefully employs TT with another, the energy fields are interconnected in a mutual exchange, which potentiates the possible benefit to each person.

The current practice demands and effects of stress on nurses are well documented (McVicar, 2003; Kallaith & Morris, 2002; (McVicar, 2003; Medland, Howard-Ruben, & Whitaker, 2004) among others. Nursing is fast-paced, demanding, and although extremely rewarding, can be emotionally and physically exhausting. Nursing practice requires high degrees of technical, interpersonal, and ethical expertise, physical and emotional stamina, and frequent witnessing and addressing of suffering contributing to increased stress.

The stress response is initiated in the hypothalamus-pituitary-adrenal axis (HPA) and the sympathetic nervous

system, which senses and responds to stressors in a cascading and appropriate adaptive reaction (Chrousos, 2009; McEwen, Nasveld, Palmer, & Anderson, 2012). This process stimulates the adrenals to release appropriate levels of cortisol. Over time and with repeated triggers of stress, cortisol levels remain high negating the appropriate physical and emotional responses to stress, (Feder, Nestler,& Charney, 2009).The HPA and sympathetic nervous system pathways activate an increased cortisol response leading to an inflammatory immune response, increased heart rate and blood pressure (McEwen, 2008; McEwen et al, 2012).

Nurses working in such high intensity practice settings have reported anecdotally that TT is helpful in reducing their perceived stress levels when they receive a treatment during a busy shift. To date, there are no studies to address using TT to reduce stress during their work shift.

Purpose

The purpose of this investigation was to explore the experience and impact of providing and receiving Therapeutic Touch treatments on nurses working in oncology and respiratory nursing.

Methods

The present mixed method study was designed to test the hypotheses that nurse participants who receive and offer10-minute TT interventions will have significantly lower (1) cortisol, (2) heart rate and blood pressure, and (3) state anxiety levels, as well as significantly improved (4) overall comfort and (5) general well-being following the TT intervention. The present study also was designed to describe the experiences of the nurses who offered and received TT during the study.

Setting and Participants

A convenience sample of staff nurses on the Bone Marrow Transplant Unit and the Respiratory Acute Care Unit in a large academic center in the northeastern United States were invited to participate. Eligibility criteria included nurses who were certified to do TT and provided treatments and nurses who were willing to receive a TT treatment and were willing to discuss this experience.

Protections of Human Subjects

Before commencement of this study, institutional Internal Review Board (IRB) approval was obtained. The PI assured privacy and confidentiality for all the research participants. Per IRB, Written consent was waived.

Procedure

Quantitative

The sequential mixed method study included collection of quantitative measures of stress (cortisol, hear rate and blood pressure), anxiety, comfort, and overall well-being, as well as qualitative reports of the participants' experiences of TT. The quantitative portion of the study was a pretest-posttest design.

Both nurses in the dyad of those providing and those receiving TT had their vital signs and salivary cortisol levels assessed, and completed the Spielberger (1970) State-Trait Anxiety Inventory and visual analog scales before and after the TT intervention. The nurses providing the TT intervention recorded the names, dates, and times of the intervention and noted blood pressure and heart rate, and they administerd the STAI and VAS. Specific demographic data were not collected.

Instruments

Data collection of physical measures for the study occurred before and immediately following each treatment for the nurse

receiving the TT treatment. Blood pressure was measured using a sphygmomanometer and a stethoscope. Heart rate was measured by counting the radial pulse for one minute. Respiration was measured by counting inspirations and expirations for one minute. All blood pressure, heart rate, and respiration measurements were taken by one of the RNS providing TT treatments. Data was recorded on the data collection form.

Anxiety

The Spielberger State/Trait Anxiety questionnaire (STAI): The STAI was developed to investigate state/trait anxiety in normal adults. The State Anxiety tool STAI (Form Y) contains twenty items that asks respondents to describe how they feel "right now" to a series of 20 questions. The internal consistency of the STAI (Form Y) as measured by Alpha coefficients in a normative sample resulted in an alpha coefficient of .92. Repeated measures using this instrument have reported similar levels of consistency. Spielberger established construct validity with a large group of college students under stress of final examinations and found that the stress prior to testing was significantly higher than following the testing period. These findings have also been supported in subsequent studies by (Sarasen & Spielberger, 1975; Spielberger, 1995, Heidt, 1981, Quinn, 1982 and Coakley, 2001).

Estimates of comfort and well-being visual analog scales

The visual analog scale (VAS) provided one way to obtain the Nurse's estimates of comfort and well being. A VAS is a scale determined by a straight line that represents the continuum of the dimension being measured with anchors at either end to help delineate boundaries of a measure (McDowell & Newell, 1987). The scale, conventionally 10 cm long may be printed either vertically or horizontally. Each end of the scale is anchored with labels that indicate the range being considered, eg; absence of pain to extreme pain. The scale requires about 30 seconds to complete with a reported correlation of .99 (McDowell & Newell, 1987). Additionally, correlations between vertical and horizontal scales range from 0.89 to 0.91 (McDowell & Newell, 1987). Levels of well being and comfort were measured using the VAS.

Salivary cortisol

Cortisol, an important hormone in the body, is secreted by the adrenal glands and involved in proper glucose metabolism; regulation of blood pressure; insulin release for blood sugar maintenance; immune function and inflammatory response. Cortisol has been linked with adverse health outcomes when elevated (Kiecolt-Glaser, 1998, McCain, 2005). It is well documented in the literature that salivary cortisol is a reliable reflection of free serum cortisol levels and has been used as a measure when investigating physiologic responses to stress (Kahn, Maxwell & Barron, 1984, Kirschbaum & Hellhammer, 1989; Kirschbaum & Hellhammer, 1994; Barker, Knisely, McCain, & Best, 2005). In this study, salivary Cortisol levels were measured immediately before the TT intervention and immediately after the TT intervention.

Qualitative

Nurses who participated in the study were invited to focus group interviews to share their experiences of offering and receiving Therapeutic Touch. A qualitative descriptive approach was utilized during this aspect of the study and data were analyzed using content analysis. The focus group questions are included in Table 3. A master's prepared nurse who did not work

on either unit and has expertise in data collection conducted the focus groups. The focus group interviews were audio-taped, transcribed verbatim, and analyzed).

Analysis

The quantitative data was entered into SPSS and pre post measures were analyzed using paired *t* tests. The qualitative data was analyzed using content analysis as outlined by Downe-Wamboldt (1993). To ensure rigor, the authors independently analyzed the interview data by conducting a line-by-line analysis for initial identification of themes. They then considered together their independent findings, synthesized and refined their understandings, and returned to the data to confirm the accuracy of their findings. Two overall themes emerged.

Results: Quantitative Data

Table 1 represents the nurses who provided the TT to their colleagues on the two units. Eight nurses provided TT on their staff nurse colleagues. There were no restrictions on the number of times the staff nurses could have a TT so some staff nurses had multiple treatments.

Table 2 represents the staff nurses who Received a TT treatment during their work shift. No other demographic details were collected. Table 3 represents the focus group questions asked of the nurse participants who either providing or received TT.

Table 1. TT providers paired *t* tests

Variable	Pre mean	Post mean	d	t	P
BP Systolic	109	111	-1.67	-1.09	0.286
BP Diastolic	68	68	0.44	0.351	0.729
HR	76	76	0.44	0.224	0.825
Resp	17	17	0.67	1.39	0.175
VAS comfort	7.43	7.98	-0.56	-3.02	.006*
VAS well being	7.98	8.48	-0.50	-3.74	.001*
Cortisol	0.28	0.30	-0.02	-1.04	0.306
STAI total	1.608	1.38	0.228	6.02	.000*

Table 2 TT Recipients

Variable	Pre mean	Post mean	d	*t*	p
BP Systolic	109	108	1.42	1.04	0.308
BP Diastolic	65	66	-1.23	1.17	0.250
HR	66	64	2.65	2.02	0.54
Resp	17	16	1.18	2.34	0.029*
VAS comfort	6.40	7.92	-1.51	6.30	.000*
VAS well being	6.90	8.25	-1.34	7.25	.000*
Cortisol	0.29	0.36	-.069	2.61	.015*
STAI total	1.86	1.51	0.345	5.24	.000*

Table 3 Focus group questions

1. How did offering/receiving Therapeutic Touch affect you?
2. How did Therapeutic Touch affect you/your colleague?
3. Please describe the effect of receiving or offering TT on your sleep after receiving the intervention.
4. How did Therapeutic Touch affect you/your colleagues over time?
5. How did Therapeutic Touch affect you/your colleagues over time?
6. What is the impact of having a number of nurses offering Therapeutic Touch on the unit?
7. How does the offering of Therapeutic Touch contribute to the healing environment of the unit?

Findings: Qualitative Data The focus groups were conducted on each of the participating units and included both the providers and the recipients of the TT intervention. The analysis of the experiences of offering and receiving Therapeutic Touch described by the nurses revealed two overall themes.

Theme One: TT promoted healing, comfort, and relaxation for nurses offering and receiving the research intervention

Nurses described the benefits of offering TT to colleagues in relation to the impact on those receiving TT and for the nurses offering the intervention. All of the nurses who received TT and the nurses who offered it described relaxation during and after the intervention. One nurse was disappointed to learn that her blood pressure increased following the intervention, which surprised her, as she was feeling more relaxed.

Generally, the participants experienced increased energy and overall enhanced sense of well-being following TT. Nurses offering TT were moved to realize that they helped colleagues feel better through their intervention. The comfort, peace, and healing experienced by the nurses are revealed in the following quote: "I was very comfortable and at peace when she performed the therapy."

One nurse described how TT helped to relieve pain she was experiencing that day and stated the following:

> I had a really sore back that day and when [the nurse interventionist] did it, she said she could feel right exactly in the space and I thought my back felt better afterwards.

Nurses who had provided TT to patients in the past found it validating to receive positive feedback from peers recognizing that patients might feel the need to respond positively to a nurse trying to intervene to provide comfort. One nurse described it this way.

> .. .it was also good to have feedback from a peer rather than from a patient because you would think that patients, of course, would say that they feel much better because they are sick, but from a peer that you feel there's nothing going on with them, but then hearing all the positive things from them, it was really eye opening,

Participants described the benefits of either providing or receiving TT, despite the challenges of a busy inpatient unit. Recipients described wondering if they should take time to receive TT, but once they had a treatment, they recognized the calm they experienced and ability to focus as benefits. The providers of TT felt challenged by trying to center prior to giving a treatment on a busy unit. One nurse described the difficulties this way: "You can always find the time, but calming down…. not thinking about the things I need to do, that's the struggle"

However, providers overwhelmingly realized that providing TT to a colleague allowed them to feel centered, and through helping a colleague contributed to the creation of a healing environment.

Theme Two: The nurses identified the benefits of Therapeutic Touch for their patients and wanted to expand the availability of Therapeutic Touch

Although the research was focused on TT as an intervention for nurses, the participants readily related their experiences with TT to potential benefits for their patients. Drawing from their experiences from this study as well as being on an inpatient unit where TT has been offered for many years, the nurses described the benefits of TT. This was both on the individual patient level as well as the unit level. Overall, they described that having a large number nurses be able to offer TT created a more healing environment.

They described the need for more TT training availability. They also noted the direct benefits to patients when nurses are relaxed and experience increased energy as a result of the TT they experienced. The following quotes illustrate the nurses' recognition of the value of TT for patient-care:

> Absolutely (there should be more TT training to nurses on the unit). I mean just hearing how much feedback from people that said how much it helped them relax, then, yes, absolutely. I think it will help not only for them, but if they can do that to other patients here, especially for us because we deal so much with anxiety and shortness of breath.

Another nurse described the need for more nurses to be trained in TT so that it could be offered to more patients as an intervention. She said:

> I think a lot of us would like to be trained in it (TT)….because it would be nice if your patients wanted it and you could say I can do this and you happen to have a minute – if you could do that for them.

One of the nurses, referring to the benefit she witnessed when one of her patients received TT from a colleague earlier said:

> So she gives it to him before bed every time that she's here. So he gets it frequently and I think it does help quite a lot, especially because he has a significant psych history and some issues with anxiety and I think it absolutely helps him sleep.

Every nurse who participated, whether she offered or received TT, described TT as a valuable intervention for promoting comfort, relaxation, and healing in the workplace. Challenges relative to taking the time from patient care to center were also described.

Discussion

Both recipients and providers of TT had statistically significant differences in the assessment of anxiety, comfort, and wellbeing as assessed by STAI and VASs. State anxiety decreased and levels of comfort and wellbeing increased. Further, the nurses who received TT had a reduction in the respiratory rates, blood pressure and heart rates. Salivary cortisol levels did not change in either group. Overall, the findings of the study support the benefits of TT identified in prior research (Coakley, 2001, Barron et al, 2008, Coakley & Duffy, 2010) and validate the hypotheses tested with the exception of the hypothesis for the salivary cortisol results.

Vital signs and anxiety have been tested in relation to TT for years and have been found to decrease following a treatment. Coakley measured serum cortisol in 2010 and found that cortisol did decrease following a TT treatment, however many patients did not wish to have their blood drawn so refused participation in that study. In this current investigation, Coakley et al choose to use salivary cortisol as a biomarker because it is less intrusive. Staff nurses were willing to do salivary cortisol testing however because of the fast paced nature of the inpatient care units, often were very limited in the time they could devote to the study and reported often checking salivary cortisol shortly after eating and after doing the TT.

Salivary cortisol did not decrease significantly as expected. This may be due to several factors. One concern that was raised during the focus group discussions was that the nurses had to find time to do a TT treatment in the midst of a very busy work shift so many times they offered or received the treatment and measured the cortisol, but may not have waited the 15-30 minutes since the last food or beverage which is the recommendation for assessing salivary cortisol (Kirschbaum, 1994). Another question that arose during the analysis of the data is in relation to the timing of the post-TT salivary cortisol assessment. The cortisol swabbing was done immediately following the TT interventions because of a lack time. However, there is literature that suggests waiting for 30-45 minutes, to check the post intervention cortisol level may have allowed enough time to yield different findings (Barker, et al, 2005). Further investigation of the procedures for the assessment of salivary cortisol levels following a research intervention is warranted.

Challenges related to offering TT on a busy inpatient unit, in spite of the benefits recognized by the nurses, validated earlier findings by Barron, Coakley, Fitzgerald, and Mahoney (2008). Nurses are integral to the environments in which they work and as such found it difficult to arrange a quiet location and uninterrupted time for the intervention. Nurses described difficulty with centering in the midst of a busy work shift as a major obstacle, as they did in the earlier study (Barron et al). Given the benefits for the nurses, ongoing research to explore models for creating that opportunity in the workplace is clearly indicated.

Implications

In this study, offering and receiving TT was a valuable strategy for enhancing the nurses' sense of well-being and comfort and decreasing anxiety when offered during the work day. Further research on offering TT during a busy work shift is indicated both to expand these findings and to address the questions of timing and procedure for the most accurate assessment of salivary cortisol levels. Nurses in this study expressed interest in participating in future research focused on the offering of TT during the work shift among nurse colleagues.

Given the well-documented stressors of nursing practice, and implications of stress on nurses' health (Blum, 2014), the emphasis on enhancing the wellness of nurses is of great significance. Research focusing on strategies that promote wellness at work for nurses is timely and consistent with calls from the American Nurses Association (ANA), (Blum, 2014; Letvak, 2014). According to the American Holistic Nurse Association (AHNA), self-care and self-healing is critical to being able to provide nursing care because holistic nurses recognize that they cannot facilitate healing unless they are in the process of healing themselves. So important is the concept of self-care to holistic nursing that it was incorporated into the AHNA Standards of Holistic Practice in 2003 and the AHNA Scope and Standards of Practice, Core Value 5, in 2007. This research supports the notion that nurse should help to heal themselves and their colleagues as part of creating healing environments for patients.

Limitations

There are limitations of this study related to the challenges of conducting research in an in vivo clinical setting. Staff wanted to do TT and participate in the study however the challenges of caring for acutely ill patients is always their first priority so they found ways to "fit" the study into their busy work day and often measured salivary cortisol shortly after eating and shortly after doing the TT.

Conclusion

These study findings comparing self-report measures of STAI, well-being, and comfort of nurses offering and receiving TT suggests these measures improved post intervention. The nurses who received TT had a reduction in the respiratory rates, blood pressure and heart rates. Blood pressure and heart rate did not change in nurses who provided TT and cortisol levels were unchanged in each group. Nurses overwhelmingly reported TT as a positive intervention to promote calmness and a healing environment. Not surprisingly, there are challenges to implementing such a protocol on a busy inpatient unit. This indicates more research is needed to support these study findings with a goal of broader implementation of healing environments aimed at improving patient care outcomes.

References

Barker, S. B., Knisely, J. S., McCAIN, N. L., & Best, A. M. (2005). Measuring stress and immune response in healthcare professionals following interaction with a therapy dog: a pilot study , 1, 2. *Psychological reports, 96* (3) 713-729.

Barron, A. M., Coakley, A. B., Fitzgerald, E., & Mahoney, E. (2008). Integrating therapeutic touch in nursing practice on an inpatient oncology and bone marrow transplant unit: An exploratory study. *International Journal of Human Caring, 12*(2), 81–89.

Blum, C., (September 30, 2014) "Practicing Self-Care for Nurses: A Nursing Program Initiative" *OJIN: The Online Journal of Issues in Nursing*, *19*(3), Manuscript 3.

Coakley, A. B. (2001). Exploration of energy expenditure between provider and recipient during a therapeutic touch (TT) treatment and the response to (TT) on health individuals. *Dissertation Abstracts International*. (University Microfilms No. 3021571).

Coakley, A. B., & Duffy, M. E. (2010). The effect of therapeutic touch on postoperative patients. *Journal of Holistic Nursing*, 28(3), 193-200.

Chrousos, G. P. (2009). Stress and disorders of the stress system. *Nature Reviews Endocrinology*, *5*(7), 374-381.

Downe-Wamboldt, B. (1993). Content analysis: Method, applications, and issues. *Health Care for Women International*, *13*, 313-321.

Feder, A. E., Nestler E. J., & Charney, D. S. (2009). Psychobiology and molecular genetics of resilience. *National Review in Neuroscience, 10*(6), 446-457.

Heidt, P. R. (1979). An investigation of the effects of Therapeutic Touch on anxiety of hospitalized patients. *Dissertation Abstracts International, 40*, 5206B (University Microfilms No. 8010289).

Heidt, P. (1981). Effect of therapeutic touch on anxiety level of hospitalized patients. *Nursing Research*, *30*(1), 32-37.

Heidt, P. R. (1990). Openness: A qualitative analysis of nurses and patients' experiences on therapeutic touch. *Image, 22*, 180-186.

Kahn, S. E., Maxwell, J. U., & Barron, J. L. (1984). Salivary cortisol assessment in the evaluation of hypothalamic-pituitary-adrenal function. *S Afr Med J, 65*, 843-846.

Kallaith, T., & Morris, R. (2002). Job satisfaction among nurses: A predictor of burnout levels. *Journal of Nursing Administration, 32,* 648-654.

Kiecolt-Glaser, J. K., Page, G. G., Marucha, P. T., MacCallum, R. C., & Glaser, R. (1998). Psychological influences on surgical recovery: perspectives from psychoneuroimmunology. *American Psychologist, 53*(11), 1209.

Kirschbaum, C., & Hellhammer, D. H. (1989). Salivary cortisol in psychobiological research: an overview. *Neuropsychobiology, 22*(3), 150-169.

Kirschbaum, C., & Hellhammer, D. H. (1994). Salivary cortisol in psychoneuroendocrine research: recent developments and applications. *Psychoneuroendocrinology, 19*(4, 313-333.

Krieger, D., Peper, E., & Ancoli,S. (1979). Therapeutic touch: Searching for evidence of physiological change. *American Journal of Nursing, 79*, 660-662.

Krieger, D. (1993). *Accepting your power to heal: the personal practice of therapeutic touch.* Santa Fe, NM: Bear & Co.

Letvak, S. (2014). Overview and Summary: Healthy Nurses: Perspectives on Caring for Ourselves. *OJIN: The Online Journal of Issues in Nursing,19*(3).

Macrae, J. (1987). *Therapeutic touch: A practical guide.* New York: Alfred A. Knopf.

McBee, L. (2003). Mindfulness practice with the frail elderly and their caregivers: changing the practitioner-patient relationship. *Topics in Geriatric Rehabilitation, 19*(4), 257-264.

McCain, N. L. (2005). Psychoneuroimmunology, spirituality, and cancer. *Gynecologic oncology*, *99*(3), S121.

McDowell, I., & Newell, C. (1987). Pain measurements. *Measuring health. A guide to rating scales and questionnaires*, *2*, 335-346.

McEwen, B. S. (2008). Central effects of stress hormones in health and disease:

Understanding the protective and damaging effects of stress and stress mediators. *European journal of pharmacology*, *583*(2), 174-185.

McEwen, B., Nasveld, P., Palmer, M., & Anderson, R. (2012). Allostatic load. *A Review of the Literature. Australia: Department of Veterans Affairs*.

McVicar, A. (2003). Workplace stress in nursing: A literature review. *Journal of Advanced Nursing, 44,* 633-642.

Meehan, T. C. (1985). The effect of therapeutic touch on the experiences of acute pain in postoperative patients. *Dissertation Abstracts International*, 46, 795 B. (University Microfilms No. 8510765).

Medland, J., Howard-Ruben, J., & Whitaker E. (2004) Fostering psychosocial wellness in oncology nurses. *Oncology Nursing Forum, 31,* 47-54.

Mulloney, S., & Wells-Federman, C. (1996). Therapeutic touch: A healing modality. *Journal of Cardiovascular Nursing 10*(3), 27-49.

Parkes, B. (1985). *Therapeutic touch as an intervention to reduce anxiety in elderly hospitalized patients.* Unpublished doctoral dissertation, University of Texas at Austin.

Quinn, J. F. (1982). An investigation of the effects of therapeutic touch done without physical contact on state anxiety of hospitalized cardiovascular patients. *Dissertation Abstracts International, 43,* 1797-B. (University Microfilms No. DA 82-26-788).

Rogers, M. E. (1992). Nursing science and the space age. *Nursing Science Quarterly*, *5*, 27-34.

Sarason, I. G., & Spielberger, C. D. (1975). *Washington, DC, Hemisphere*.

Spielberger, C. D. (1970). *STAI manual for state-trait anxiety inventory*. Palo Alto, CA: Consulting Psychologists' Press.

Spielberger, C. D. (1995). *Test anxiety: Theory, assessment, and treatment*. Taylor & Francis.

Turner, J. G., Clark, A.J., Gauthier, D.K., & Williams, M. (1998). The effect of therapeutic touch on pain and anxiety inburn patients. *Journal of Advanced Nursing, 28*(1), 8-9.

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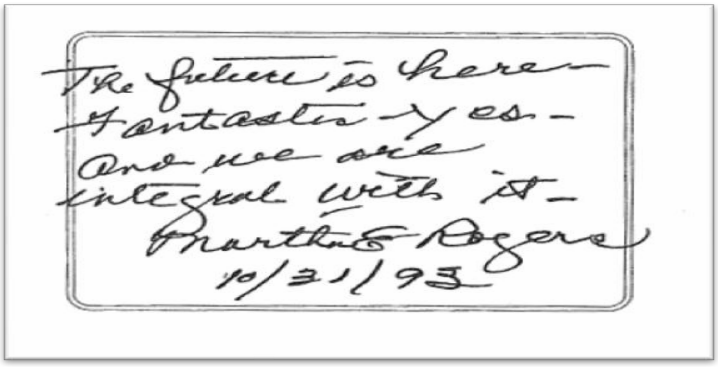

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