Diffusion of Innovations-Informed Knowledge Translation Strategy to Implement Optimal Safe Nursing Workforce Policy in Practice

Claire Su-Yeon Park1,2, Sangmin Lee3, Haejoong Kim4, Mehmet Kabak5

1University of Alberta Faculty of Nursing, Edmonton, Alberta, Canada
2CEO, Center for Econometric Optimization in the Nursing Workforce, Seoul, Republic of Korea
3School of Information Convergence, Kwangwoon University College of Software and Convergence, Seoul, Republic of Korea
4Department of Industrial and Management Engineering, School of Industrial Management and Safety Engineering, Korea National University of Transportation College of Engineering, Chungju-si, Chungbuk, Republic of Korea
5Department of Industrial Engineering, Gazi University Faculty of Engineering, Ankara, Turkey

ORCID iDs of the authors: C.S.-Y.P. 0000-0002-2109-9885; S.L. 0000-0002-5215-2546; H.K. 0000-0002-3727-094X; M.K. 0000-0002-8576-5349.

Cite this article as: Park, C. S., Lee, S., Kim, H., & Kabak, M. (2022). Diffusion of innovations-informed knowledge translation strategy to implement optimal safe nursing workforce policy in practice. Florence Nightingale Journal of Nursing, 30(1), 92-99.

Abstract

AIM: This study aims to develop a free, limited-edition workshop as an effective knowledge translation strategy to enhance nurse leader-perceived self-efficacy for competence using Park’s Sweet Spot Theory and to evaluate its effectiveness over time.

METHOD: This is a study showing the process of developing a study protocol and its details.

RESULTS: A 2-day workshop was developed for innovators and early adopters among nurse leaders with a macro-level influence based on Rogers’s diffusion of innovations theory, which consists of an introduction of Park’s Sweet Spot Theory, hands-on experience, a summary session, and a presentation of a certificate of completion. The workshop will be held at the University of Alberta Faculty of Nursing, using the “enabling blends” mode. A hybrid design of comparative effectiveness research and analysis of change will be utilized to assess nurse leader-perceived self-efficacy.

CONCLUSION: This protocol is significant as the first step in providing scientific rationales on how to effectively implement new knowledge—optimal safe nurse staffing levels derived from Park’s Sweet Spot Theory—into the right (safe yet efficient) nursing workforce policy-making to alleviate global nursing shortages.

Keywords: Diffusion of innovations, knowledge translation, nursing shortage, optimal safe nurse staffing levels, Park’s Optimized Nurse Staffing (Sweet Spot) Estimation Theory

Introduction

Coupled with a rapidly aging population, a low global birth rate is cutting the available workforce worldwide (Szabo et al., 2020). This is very likely to result in insufficient and unsafe nursing care for the elderly as well as climbing welfare costs in the future (Aghakhani & Park, 2019). Even more concerning is that its socioeconomic impact would be more than just undermined economic growth potential; health disparities represented by conflicts, inequity, and inequality among generations and social classes would further worsen (Vollset et al., 2020). Such problems are not limited by borders, and their effects may be experienced worldwide in the near future (Vollset et al., 2020). To make matters worse, the unprecedented coronavirus disease 2019 (COVID-19) pandemic has limited the birthrate and accordingly hastened population aging and decline across the globe, both of which are highly likely to bring out serious policy concerns in terms of the social and economic fallouts in the near future (Aassve et al., 2020).

One of those fallouts is already occurring; the global nursing shortage (Park, 2017, 2018a,b) is a worldwide problem that has only intensified due to the COVID-19 pandemic. There is a wealth of research over the past 40 years stating that more (or higher educated) nurses lead to better patient outcomes (Park, 2018a,b). However, its implementation in practice leaves a lot to be desired. One of the critical reasons for such a bottleneck maybe the failure to fully address contextual factors in the nursing workforce policy-making, so-called “decision-making context,” while disproportionately focusing on “fragmentary evidence-based decision-making” (which is usually based on “more nurses and better patient outcomes”) (Dobrow et al., 2004; Park, 2018b).
This protocol thus aims to (1) develop the workshop-format training program to enhance nurse leaders’ perceived level of self-efficacy for competence in the use of Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory (providing optimal safe staffing levels fitted to each practice setting) and (2) evaluate its effectiveness over time regarding its utility.

**Primary and Secondary Outcomes**
This paper limits its scope to the nurse leaders’ perceived level of self-efficacy as the primary, proximal outcome of the study. The secondary, distal outcome of the study is Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory-driven safer staffing levels in practice, which requires policy analysis with a greater sharing of research resources and is out of the scope of this paper.

**Methods**

**Study Design**
The study protocol consists of two steps: (1) development of the workshop-style KT intervention based on Rogers’s (2003) diffusion of innovations theory and (2) evaluation of the KT intervention using a hybrid design of comparative effectiveness research (i.e., a single-blind, randomized cross-over study design) and analysis of change (i.e., a growth curve modeling [GCM] and an intra-individual variability index [IIV]).

**Stage 1 Development of Theory-Driven KT Intervention**
A free, limited-edition workshop-format training program for nurse leaders with a macro-level influence—that is, nurse executives, nursing directors, or nurse presidents/CEOs—based on Rogers’s (2003) diffusion of innovations theory (Figure 1) will be developed. A limited-edition product will deliver participants a conspicuous message of the scarcity of the workshop (limited time and quantity), enhancing its perceived value and evaluation of the training (Jang et al., 2015). Additionally, a partnership with such influential nurse leaders will enable them to generate a reinvention process (Rogers, 1995), leading to a continuous virtuous cycle for better KT into practice (Valente & Vega Yon, 2020). The target audience will additionally be focused on innovators and early adopters among nurse leaders, characterized by their willingness to accept innovation and who thus have an advantage over their peers (Rogers, 1995; Valente & Vega Yon, 2020). The promotion strategies for the workshop-format
training program will be separately developed following Rogers’s (2003) five stages of adoption (Figure 2).

Specifically, the workshop-format training program will comprise: (1) an explanation of Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory and steps to identify the optimal safe staffing levels (being matched with “a mini lesson”) (Bennett, 2007), (2) hands-on experience (being matched with “a student-centered work portion”) (Bennett, 2007), (3) a summary session (being matched with “a debriefing to enhance meta-cognition of the lesson”) (Bennett, 2007), and (4) a presentation of certificate of completion, considering that early adopters prefer to be seen as leaders and such social prestige is one of their biggest drivers (Roger, 1995; Figure 1). The main
Table 1. Main Themes for the Workshop-Format Training Program, Leading to Enhance Nurse Leader-Perceived Level of Self-Efficacy for Competence in Use of Park’s (2017a) Optimized Nurse Staffing (Sweet Spot) Theory

| Contents                                                                 | Step 1 | Step 2 | Step 3 | Step 4 |
|-------------------------------------------------------------------------|--------|--------|--------|--------|
| I. Introduction of Park’s (2017a) Optimized Nurse Staffing (Sweet Spot) theory and procedures to identify the optimal safe staffing levels per each practice setting | ✓      | ✓      | ✓      |        |
| I. CTE linkages                                                         |        |        | ✓      | ✓      |
| With a sample data or a participant’s own data                          |        |        | ✓      | ✓      |
| A. Single imputation                                                    | ✓      | ✓      | ✓      | ✓      |
| B. Cost-benefit analysis                                                | ✓      | ✓      | ✓      | ✓      |
| C. Statistics, optimization, and sensitivity analysis                   | ✓      | ✓      | ✓      | ✓      |
| D. Change detection technique, Bayesian neural network, and eXplainable AI (XAI): SHapley additive explanation (SHAP) | ✓      | ✓      | ✓      | ✓      |
| E. Synthesizing results obtained from the two different approaches:     |        |        | ✓      | ✓      |
| Meta-analysis                                                           |        |        |        |        |

Note: The educational contents and their order are based on the Park’s Optimized Nurse Staffing (Sweet Spot) Theory Extended: Copyright © 2021 Park, Claire Su-Yeon. All Rights Reserved. (private to the public). The copyright holder of the Park’s Optimized Nurse Staffing (Sweet Spot) Theory Extended and the first author of this article are one and the same. This derivative work was performed with the copyright holder’s prior written permission. Anyone may share and adapt the material of Table 1 for only non-commercial purposes by giving the appropriate credit to the original work. However, the use of the original contents, illustrations, or ideas (including an order of analysis procedure) in “Park’s Optimized Nurse Staffing (Sweet Spot) Estimation Theory (Extended)” to someone’s work, either in whole or in part, must require prior written permission from the copyright holder. This is based on the copyright guideline that prior written permission is required from both the copyright holder for the original work and the copyright holder for its derivative work(s), in a case that a third party would like to reuse the derivative work(s) (Choi, 2014, p. 71). For inquiries, please contact the copyright holder: clairesuyeonpark@gmail.com.

The mini lesson will be delivered online based on an “enabling blends” mode developed from three types of blended learning systems. The “enabling blends” mode refers to an educational modality that provides the same experience as face-to-face learning but through more user-friendly channels (Lieser & Taff, 2013). Thereby, the “enabling blends” mode-based free workshop will help mitigate participant-perceived risk and uncertainty about a new practice through online modality, creating easier access, better convenience, more flexibility, and a cost-free delivery of educational content (Lieser & Taff, 2013; Roger, 1995). The hands-on experience will also help this demographic adopt the new content without aversion by guiding them to try it out (trialability) using the basic level example (simplicity and easy use) and check the results with the naked eye (observable results) (Roger, 1995). Lastly, the summary session and the presentation of a certificate of completion will help the target group feel a sense of accomplishment in the task and lead them to disseminate their positive experience with the workshop through peer-to-peer conversations and peer networks (Roger, 1995). Thereby, the workshop will meet all of the core characteristics that cause innovations to spread (Roger, 1995).

Workshops originally aim to simultaneously promote the acquisition of knowledge and skills and changes in attitudes and behaviors but are characterized by simple, flexible, and timely application (Grossman & Salas, 2011). Thus, (a) limited time investments (usually a half to two days) from both participants and organizations and (b) small groups of active participants (typically less than 20) are common (Grossman & Salas, 2011). However, in contrast with such one-off events, longitudinal interventions may be more effective in achieving behavioral change (Grossman & Salas, 2011). In particular, when attitude changes or new pedagogical approaches are involved, such as the study protocol, more time and attention are required for group dynamics to take effect (Grossman & Salas, 2011). Nonetheless, considering that the study protocol is the first initiation to develop and validate a new workshop-format training program, the duration of the workshop will be set up as 2 days.

Based on the above conditions, the workshop-format training program can be considered as one of the effective KT strategies, particularly because the facilitation effect of the workshop is an active ingredient of KT that promotes successful implementation of evidence into practice (Kitson & Harvey, 2016). It can further address the causes of poor performance—that is, “a lack of shared responsibility for outcomes, lack of cooperation and collaboration, and limited understanding of what works”—and facilitate effecting change and improvement for collaborative public health action, such as “analyzing information, establishing a vision and mission, using strategic and action plans, developing effective leadership, documenting progress and using feedback, and making outcomes matter” (Fawcett et al., 2010).
Stage 2. Evaluation of the KT Intervention

A head-to-head comparison of the workshop-format training program versus the mini lesson (online education only) will be conducted, using a single-blind, randomized cross-over study design, at the University of Alberta Faculty of Nursing, Edmonton, Canada (Figure 3). The primary aim is to determine the utility of the workshop over time. Its specific evaluation indicator is nurse leaders’ perceived level of self-efficacy for competence in use of Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory (providing optimal safe staffing levels fitted to each practice setting).

Eligibility Criteria

The nurse leaders will include, but will not be limited to, nurse executives, nursing directors, or senior administrators working in Edmonton, Canada. The first strategy to recruit this target group will be media promotion on the popular webpages or social network services (Roger, 1995), such as the Twitter, Facebook, or Instagram of the Canadian Nurses Association, the Canadian Association of Schools of Nursing, and nursing (leadership) conferences which will be held in Edmonton, Canada. The second strategy to recruit the target demographic will be individually customized approaches (Roger, 1995), including, but not be limited to, a personalized mail, email, or phone call.

Randomization

After screening, the study participants will be randomized 1:1 to one of two educational intervention arms: the mini lesson (online education only) to the workshop (A arm) and the workshop to the mini lesson (online education only) (B arm) (Figure 3). The random allocation will be performed by independent researchers, according to a randomization table using a random permuted block of at least 80 participants. However, the allocation will not be concealed from the researchers enrolling, assessing, and educating the study participants until the end of the study. This is because, due to the nature of this study, researchers can sufficiently predict which arm each participant belongs to.

Interphase, the interval between the two stages will be 3 months (Figure 3). Since the period was verified to be an effective duration for the retention of educational effects, it is supported as a valid washout period between the two stages of the study (Ahn et al., 2017).

Sample

The effective sample size for the comparative effectiveness research design is relatively small (Lee et al., 2014; Portney, 2020). However, at least a total of 30 cases are required for GCM (Portney, 2020), which is in line with the Central Limit Theorem (CLT) that states sample sizes equal to or greater than 30 are considered sufficient for the CLT to hold (Islam, 2018). Nonetheless, to enroll at least more than 75 participants (more than 30 for each arm, with a total of 60 over) will be pursued to detect a significant difference between arms, expecting a dropout rate of up to 20%.

Classification of Events

The specifics of the workshop-format training program versus the mini lesson (online education only) have been discussed in

Figure 3.
Study Design.
GPSS = General Perceived Self-efficacy Scale; ANCOVA = analysis of covariance. Adapted from “Comparative Effectiveness Research and Its Application to Nursing Education,” by C. S. Park, E. O. Park, and M. A. Ocak, 2016, Journal of Learning and Teaching in Digital Age, 1(2), p. 16. The copyright holder of the original figure and the first author of this article are one and the same. This derivative was performed with the copyright holder’s prior written permission.
specifically, the evaluation study design can control the main threats to internal validity such as history effect, maturation effect, learning effect, instrumentation-variation effect, regression effect, selection bias, casual time-out, compensation effect, instrumentation-variation effect, learning effect, and demand artifact (Park et al., 2016). Even though the recruitment process of the participants is convenient sampling, making it difficult to control sampling errors and obtain a more

**Ethical Consideration**

An official approval from the Institutional Review Board of the University of Alberta will be obtained to ensure that the research is done in consideration of ethical principles of voluntariness, confidentiality, beneficence, and non-maleficence.

**Reporting**

Study findings will be articulated following the “CONSORT 2010 statement: extension to randomized crossover trials” (Dwan et al., 2019) to ensure scientific integrity, rigor, and clarity of the study.

**Discussion**

Considering that “evidence is a multidimensional construct embedded within innovation” (Kitson & Harvey, 2016) and it may take longer than 1 year for policy change to bring out behavioral changes in an individual (Saunders et al., 2019), in order to ameliorate global nursing shortages in a timely manner, effective KT strategies are urgently needed to induce stakeholders to increase nursing workforce without innovation resistance (Sochtalski & Weiner, 2011). In this regard, this protocol has significant implications as the first initiation in providing scientific rationales on how to implement new knowledge into nursing workforce policy-making beyond stakeholders’ innovation resistance more effectively. This protocol is particularly important because it is based on the two well-developed theories—Rogers’s (2003) diffusion of innovations theory and Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory. “There is nothing so practical as a good theory for implementation” (Lynch et al., 2018).

Noteworthy, this study protocol utilizes a two-stage rigorous study design in order to develop the effective KT strategy, a so-called “free, limited-edition, theory-driven workshop-format training program,” which may significantly lead to the implementation of optimal safe nurse staffing policy practice. The two-stage rigorous study design consist of (1) development of the workshop-style KT intervention based on Rogers’s (2003) diffusion of innovations theory, and (2) evaluation of the KT intervention using a hybrid design of comparative effectiveness research (i.e., a single-blind, randomized cross-over study design) and analysis of change (i.e., a GCM and an IVI) (Figure 3). The objective and the evaluation indicator of the newly developed KT strategy are to improve nurse leaders’ perceived level of self-efficacy for competence in the use of Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory (providing optimal safe staffing levels fitted to each practice setting).
representative subset, this study design can control the interaction between the intervention and selection through random assignment, complementing generalizability of the study’s findings (Portney, 2020). Random assignment further guarantees no systemic bias between comparisons through equal distribution of participants to each arm, enhancing the reliability of the study’s findings (Portney, 2020). Statistical corrections can also be performed to control the possible systemic bias between comparisons. Above all, the evaluation study design utilizes a cross-over structure that leads the participants to avoid the risk of being assigned to the study group that receives less benefit, which ensures "equipoise" of the comparative effectiveness research as well as guarantees the participants’ educational equivalency (Park et al., 2016).

GCM along with IVI illuminates a change in the effectiveness of the workshop over time. GCM presents overall change for a sample in the effectiveness of the workshop, describing interindividual differences in change and IVI illustrates a reliable trait-like indicator of a within-person consistency in the effectiveness of the workshop (Park et al., 2017). IVIs are purified residual T scores, which will be obtained from standardizing residuals generated by the best fitting model in the estimation of nurse leaders’ perceived level of self-efficacy for competence using Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory (providing optimal safe staffing levels fitted to each practice setting). The analytic procedure strengthens the significance of this study because its calculation process makes IVIs uncontaminated by the learning trend, which is one of the main threats to internal validity as well as external validity (Park et al., 2017; Portney, 2020).

GCM and IVI uncover (a) who shows better outcomes than others over time, (b) why some people show better outcomes than others over time, (c) which contextual factors explain some of those interindividual differences, both in level and in the rate of change, and (d) which contextual factors are correlated to the increase or decrease of the within-person fluctuations (Park et al., 2017). Both of them have an important implication in that they reveal new knowledge, which existing traditional statistical analyses cannot, and shed light on possible solutions to unanswered questions in nursing research (Park et al., 2017).

**Conclusion**

This article provides a step-by-step detailed study protocol for (1) the development of the workshop-style KT intervention based on Rogers’s (2003) diffusion of innovations theory and (2) the evaluation of its effectiveness over time with regards to its utility. The protocol will serve as a guide to inform readers of the Florence Nightingale Journal of Nursing “who/how should do what” in a step-by-step manner in their own research/practice setting. Thereby, the protocol will contribute to enhancing nurse leaders’ perceived level of self-efficacy for competence in the use of Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory (providing optimal safe staffing levels fitted to each practice setting). The protocol will accordingly lead the nurse leaders to effectively implement new knowledge—that is, optimal safe nurse staffing levels derived from Park’s (2017) Optimized Nurse Staffing (Sweet Spot) Theory—into the right (safe yet efficient) nursing workforce policy-making within their own context. Such a sequence of processes may consequently contribute to alleviating global nursing shortages.

**Ethics Committee Approval:** This is a protocol study. An official approval from the Institutional Review Board of the University of Alberta will be obtained to ensure that the research is done in consideration of ethical principles of voluntariness, confidentiality, beneficence, and non-maleficence.

**Peer Review:** Externally peer-reviewed.

**Author Contributions:** Concept - C.S.P.; Design - C.S.P.; Supervision - S.L., H.K., M.K.; Resources - C.S.P.; Materials - C.S.P.; Data Collection and/or Processing - C.S.P.; Analysis and/or Interpretation - C.S.P.; Literature Search - C.S.P.; Writing Manuscript - C.S.P.; Critical Review - S.L., H.K., M.K.; Other - S.L., H.K.

**Acknowledgments:** We sincerely thank Kara Schick-Makaroff, PhD, RN, Associate Professor at the University of Alberta Faculty of Nursing, Edmonton, Canada, for her well-guided scholarly advice to enhance the scientific value of this paper. The present research has also been conducted by the research grants of the Korea National University of Transportation and the Kwangwoon University in 2021. The authors truly thank Dr. Schick-Makaroff, the Korea National University of Transportation, and the Kwangwoon University for their contribution and dedication.

**Conflict of Interest:** The authors declare no conflicts of interest.
Financial Disclosure: This paper was funded by research grants (no specific grant numbers) from the Korea National University of Transportation and the Kwangoon University in 2021; the recipients were Dr. Haejoong Kim and Dr. Songmin Lee. The funders (https://www.kw.ac.kr/en/index.jsp; https://www.ut.ac.kr/english.do) did not and will not have a role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

References

Aasvee, A., Cavalli, N., Mencarini, L., Plach, S., & Livi Bacci, M. (2020). The COVID-19 pandemic and human fertility. Science, 369(6502), 370–371. [CrossRef]

Aghakhanl, N., & Park, C. S. (2019). Spiritual well-being promotion for older adults: Implication for healthcare policy makers’ decision making on cost savings. Journal of Education and Health Promotion, 8(1), 165. [CrossRef]

Ahn, M. S., Jo, H. S., Uhm, D. C., & Ji, H. H. (2017). Retention effect of basic life support education program on attitude, knowledge, skillfulness for nursing students. Journal of Korean Academy of Nursing Education, 23(4), 441–451. [CrossRef]

Bennett, S. (2007). That workshop book. New Hampshire, USA: Heinemann.

Choi, H. (2019). Imputation method based on a voting manner for missing data. Seoul, Republic of Korea: Department of Industrial Engineering, College of Engineering, Hanyang University Graduate School.

Choi, S.-P. (2014). A review on the established requirements and scope for derivative works [Die Voraussetzungen und Wirkungen von Bearbeitungen Fremder Werke]. Retrieved from https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE02434348.

Dobrow, M. J., Goel, V., & Upshur, R. E. G. (2004). Evidence-based health policy: Context and utilisation. Social Science and Medicine, 58(1), 207–217. [CrossRef]

Dwan, K., Li, T., Altman, D. G., & Elbourne, D. (2019). CONSORT 2010 statement: Extension to randomised crossover trials. BMJ, 366, i4378. [CrossRef]

Fawcett, S., Schultz, J., Watson-Thompson, J., Fox, M., & Bremby, R. (2010). Building multisectoral partnerships for population health and health equity. Preventing Chronic Disease, 7(6), A118. Retrieved from http://www.cdc.gov/pcd/issues/2010/nov/10_0079.htm.

Fischer, K. D., & Strang, V. (2004). Decision-making and nurse case management: A philosophical perspective. ANS. Advances in Nursing Science, 27(1), 32–43. [CrossRef]

Friedrich, D. (2019). Effectiveness of peer review as cooperative web-based learning method applied out-of-class in a role-playing game: A case study by quasi-experimental approach. Smart Learning Environments, 6(1), 19. [CrossRef]

Grossman, R., & Salas, E. (2011). The transfer of training: What really matters. International Journal of Training and Development, 15(2), 103–120. [CrossRef]

Islam, M. R. (2018). Sample size and its role in central limit theorem (CLT). International Journal of Physics and Mathematical Sciences, 1(1), 37–47. [CrossRef]

Jang, W. E., Ko, Y. J., Morris, J. D., & Chang, Y. (2015). Scarcity message effects on consumption behavior: Limited edition product considerations. Psychology and Marketing, 32(10), 989–1001. [CrossRef]

Kitson, A. L., & Harvey, G. (2016). Methods to succeed in effective knowledge translation in clinical practice. Journal of Nursing Scholarship, 48(3), 294–302. [CrossRef]

Letzel, P. B., Berger, D., Campbell, L., & Loving, T. J. (2017). Falsifiability is not optional. Journal of Personality and Social Psychology, 113(2), 254–261. [CrossRef]

Lee, E. Y., Park, J. K., Lee, W., Kim, Y. K., Park, C. S., Giles, J. T., Park, J. W., Shin, K., Lee, J. S., Song, Y. W., & Lee, E. B. (2014). Head-to-head comparison of udenafil versus amiodarone in the treatment of secondary Raynaud’s phenomenon.

A double-blind, randomized cross-over study. Rheumatology, 53(4), 658–664. [CrossRef]

Lieser, P., & Taff, S. D. (2013). Empowering students in blended learning. Journal of Applied Learning Technology, 3(3), 6–12.

LoBiondo-Wood, G., & Haber, J. (2014). Nursing research: Methods and critical appraisal for evidence-based practice (8th ed). The Netherlands: Elsevier.

Lynch, E. A., Mudge, A., Knowles, S., Kitson, A. L., Hunter, S. C., & Harvey, G. (2018). “There is nothing so practical as a good theory” - A pragmatic guide for selecting theoretical approaches for implementation projects. BMC Health Services Research, 18(1), 857. [CrossRef]

Park, C. S. (2017). Optimizing staffing, quality, and cost in home healthcare nursing: Theory synthesis. Journal of Advanced Nursing, 73(8), 1838–1847. [CrossRef]

Park, C. S. (2018a). Challenging rules, creating values: Park’s Sweet Spot Theory-driven Central ‘Optimum Nurse Staffing Zone’. Journal of Advanced Nursing, 74(6), 1231–1232. [CrossRef]

Park, C. S. (2018b). Thinking ‘outside the box’. Journal of Advanced Nursing, 74(2), 237–238. [CrossRef]

Park, C. S., Park, E. O., & Ock, M. A. (2016). Comparative effectiveness and its application - Educational Journal of Learning and Teaching in Digital Age, 1(2), 10–19. Retrieved from https://devgpark.org/en/pub/poldtia/issue/55465/760067.

Park, C. S., Kang, K. H., & Yun, S. N. (2017). Growth trajectories and within-person detrended intra-individual variability to assess case managers’ competency in continuing education. Journal of Continuing Education in Nursing, 48(5), 230–238. [CrossRef]

Portney, L. G. (2020). Foundations of clinical research: Applications to evidence-based practice (4th ed). Pennsylvania, USA: F.A. Davis Company.

Rogers, E. M. (1995). Diffusion of innovations. Free Press, New York. Rogers, E. M. (2003). Diffusion of innovations. New York, USA: Free.

Saunders, R. P., Wilcox, S., Jake-Schoffman, D. E., Kinnard, D., Hutto, B., Forthofer, M., & Kaczynski, A. T. (2019). The Faith, Activity, and Nutrition (FAN) dissemination and implementation study, Phase 1: Implementation monitoring methods and results. Health Education and Behavior, 46(3), 388–397. [CrossRef]

Scholz, U., Gutierrez-Doña, B., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. European Journal of Psychological Assessment, 18, 243–251. [CrossRef]

Sochalski, J., & Weiner, J. (2011). Health care system reform and the nursing workforce: Matching nursing practice and skills to future needs, not past demands. In Institute of Medicine (IOM), The future of nursing: Leading change, advancing health (pp. 390–391). Washington, DC: The National Academies Press. [CrossRef]

Szabo, S., Nove, A., Matthews, Z., Bajracharya, A., Dhillon, I., Singh, D. R., Saare, A., & Campbell, J., & Campbell, J. (2020). Health workforce demography: A framework to improve understanding of the health workforce and support achievement of the Sustainable Development Goals. Human Resources for Health, 18(1), 7. [CrossRef]

Tabachnick, B. G., & Fiddell, L. S. (2013). Using multivariate statistics (6th ed). London, UK: Pearson.

Valente, T. W., & Vega Yon, G. G. (2020). Diffusion/Contagion processes on social networks. Health Education and Behavior, 47(2), 235–248. [CrossRef]

Vollset, S. E., Goren, E., Yuan, C. W., Cao, J., Smith, A. E., Hsiao, T., Bisignano, C., Azhar, G. S., Castro, J., Chalek, J., Dolkert, A. J., Frank, T., Fukutaki, K., Hay, S. I., Lozano, R., Mokdad, A. H., Nandakumar, V., Pierce, M., Pletcher, M., Robalik, T., et al. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: A forecasting analysis for the Global Burden of Disease Study. Lancet, 396(10258), 1285–1306. [CrossRef]

Zambruni, J. P., Rasanathan, K., Hipgrave, D., Miller, N. P., Momanyi, M., Pletcher, T. W., & Vega Yon, G. G. (2014). Effective nursing care and its impact on health outcomes: A double-blind, randomized cross-over study. Lancet Global Health, 5(4), e658–e664. [CrossRef]