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Organizational Readiness for Implementing a Postpartum Depression Screening Protocol in the NICU

Deanna L. Suber
University of South Carolina

ORGANIZATIONAL READINESS FOR IMPLEMENTING A POSTPARTUM DEPRESSION SCREENING PROTOCOL IN THE NICU

By

Deanna Laurielle Suber

Bachelor of Science in Nursing
Chamberlain College of Nursing, 2014

Master of Science in Nursing
Chamberlain College of Nursing, 2018

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Accepted by:

Suzanne Sutton, Committee Chair

Jacqueline Haverkamp, Committee Member

Lucy Easler, Committee Member

Abstract

Problem Statement: Postpartum depression (PPD) is a major depressive disorder that is the most common complication following childbirth, occurring in about 16% of new mothers (Berns et al., 2021). Mothers with infants in the Neonatal Intensive Care Unit (NICU) are 40% more likely to develop PPD but are not typically screened for this complication (Berns et al., 2021; Cherry et al., 2016; Garfield et al., 2021). Implementing a PPD screening protocol in the NICU could help increase the detection of PPD in this population but would first require an evaluation of organizational readiness to ensure sustainability. **Purpose:** The purpose of this evidence-based practice project is to determine NICU staff's perceived organizational readiness for implementing a formal PPD screening and referral protocol. **Methods:** Nurses and social workers in the NICU of an acute care hospital were asked to complete a pre-test about PPD and screening practices, a training video on PPD and a proposed screening protocol, a post-test, and an organizational readiness for implementing change (ORIC) survey to determine their readiness for implementing this proposed change. **Analysis:** Descriptive analysis was used to analyze participant characteristics, total ORIC scores, and scores for each subscale (change commitment and change efficacy). A paired *t*-test was used to compared pre and post-test scores. **Implications for Practice:** Implementing a readiness tool can help to ensure effective organizational change.

Keywords: organizational readiness, ORIC, postpartum depression, neonatal intensive care unit

Organizational Readiness for Implementing a Postpartum Depression Screening Protocol in the NICU

Change in the health care system is inevitable. The manner of healthcare delivery, technologies used, funding systems, quality improvement efforts, and workflow changes are just a few examples of healthcare transformations (Sharma et al., 2018). For healthcare organizations to successfully implement changes, there must be organizational readiness (Sharma et al., 2018). Shea et al. (2014) describe organizational readiness as organizational members' psychological and behavioral preparedness to implement change. Successful implementation of proposed changes is more likely when there is a high level of organizational readiness (Shea et al., 2014). When there is a low level of organizational readiness, implementing proposed changes will likely be unsuccessful, and members may resist change efforts (Shea et al., 2014).

Background

Postpartum depression (PPD) is a major depressive disorder that occurs within the first year after a mother has given birth (Berns et al., 2021). Symptoms include mood swings, decreased affection, appetite changes, feelings of worthlessness, and suicidal thoughts (Berns et al., 2021; Brownlee, 2021). It is the most common complication following childbirth, occurring in about 16% of new mothers (Berns et al., 2021; Cherry et al., 2016; Garfield et al., 2021). Higher rates of PPD are more common in younger mothers, women of racial minorities, and those with lower education levels, among other factors (Berns et al., 2021; Cherry et al., 2016). Additionally, mothers with infants in the Neonatal Intensive Care Unit (NICU) are 40% more likely to develop PPD. (Berns et al., 2021; Cherry et al., 2016; Garfield et al., 2021). However, PPD screening in the NICU is not common practice and these mothers are likely not receiving screening in the outpatient setting (Cherry et al., 2016). The American College of Obstetricians

and Gynecologists and the American Academy of Pediatrics recommend routine PPD screening. (Cherry et al., 2016; Vaughn et al., 2020). If undiagnosed and untreated, PPD can lead to impaired parent-child bonding, poor nutrition, decreased self-care, and even suicide (Murthy et al., 2021; Shovers et al., 2021).

The NICU setting provides an optimal opportunity to screen mothers because they are either unable or less likely to attend follow-up appointments in the outpatient setting where the pediatrician or obstetrician may complete the screening (Berns et al., 2021; Cherry et al., 2016; Garfield et al., 2021). Before implementing a postpartum depression screening protocol in the NICU, it is crucial to evaluate organizational readiness. Organizational change efforts may fail because of a lack of preparedness to make the change, so there must be support from all project stakeholders in order for the project to be successful (Adelson et al., 2021). The Organizational Readiness for Implementing Change (ORIC) tool is a survey that assesses individual, departmental, and organizational readiness for change (Sharma et al., 2018). It includes 12 Likert scale statements, five of which reflect change commitment, while the remaining seven reflect change efficacy (Adelson et al., 2021; Sharma et al., 2018). The 12 item Likert scale can quickly evaluate change readiness among an organization's members.

Problem Statement

The project occurred in a large acute care hospital level III NICU. This NICU does not perform any formal PPD screening for mothers of babies admitted to the NICU. They also do not currently use an organizational readiness tool for staff to assess change readiness. Implementing a PPD screening protocol in the NICU requires significant buy-in from stakeholders, which can be assessed with the ORIC scale.

Review of Literature

The project manager (PM) conducted a literature search using CINAHL to review recent evidence on assessing organizational readiness. The term "ORIC" was used, and results were filtered to include peer-reviewed articles published within the last five years. The search produced 15 results. The PM reviewed these 15 articles and eliminated eight because they either could not be fully accessed or the studies did not use the ORIC scale. The remaining seven articles used the ORIC scale to evaluate organizational member readiness before implementing a change and were included in the literature review (see Appendix A).

Organizational readiness is a vital piece of successful change implementation and sustainability (Adelson et al., 2021; Geerligs et al., 2021; Sharma et al., 2018; Shea et al., 2018; Spalluto et al., 2021; Storkholm et al., 2018; Storkholm et al., 2019). There were a few differences in the number of items used for the ORIC scale. Shea et al. (2018) developed the 12-item ORIC based on Weiner's Theory of Organizational Readiness for Change. Sharma et al. (2018), Adelson et al. (2021), and Geerligs et al. (2021) all used this same 12-item ORIC scale. Spalluto et al. (2021) adapted Shea's ORIC scale, resulting in an instrument with just nine items. Storkholm et al. (2018) and Storkholm et al. (2019) used an 11-item version of the ORIC scale after removing one question while translating and validating a Danish version of the tool. Overall, the ORIC scale revealed that most organizational members were ready to implement change when scores ranged from 39 – 56.88, where 12 is the lowest possible score and 60 is the highest possible score.

Conceptual Framework

Weiner's Theory of Organizational Readiness for Change was the conceptual framework guiding this project. This theory uses concepts from motivation, social cognitive, and

implementation theories to determine the conditions that influence organizational readiness for change, better define organizational readiness, and explain how greater organizational readiness can result in implementation effectiveness (Weiner, 2009). This theory describes organizational readiness as a multi-level and multi-faceted construct, considering organizational members' change commitment and efficacy. As part of this theory, change valence and informational assessments are critical determinants of organizational readiness, and implementation effectiveness is the primary outcome.

This theory was the foundation for the development of the ORIC scale. Sharma et al. (2018) used Weiner's theory and the ORIC scale to assess organizational readiness in 23 acute care hospitals in Switzerland. Sharma et al. (2018) found that although readiness scores varied among hospitals and units, they were positively associated with supportive leadership and the basis of quality care.

Project Purpose, Objectives, and Expected Outcomes

The purpose of this project was to determine the NICU staff's perceived organizational readiness for implementing a formal PPD screening and referral protocol. The primary objective was implementing the ORIC scale before beginning the PPD screening and referral protocol. The secondary aim was to assess staff knowledge of PPD, screening importance, and understanding of the proposed protocol. The project occurred over six weeks, allowing two weeks for completion of the pre-test, training, and post-test and four weeks for completion of the readiness survey. The PM extended the readiness survey time to four weeks, beyond the originally planned two weeks, to help increase participation. The expected outcomes were an increase in post-test scores after staff completed the PPD protocol training and that most staff would indicate organizational readiness on the ORIC scale.

Project Design

This project was an evidence-based practice (EBP) project in the NICU of an acute care hospital. The population was NICU staff which included nurses, nurse managers, and social worker(s). These staff members are integral stakeholders in implementing a PPD screening protocol, so buy-in was vital. Feasibility concerns for this project were the potential lack of responses among staff and the time it would take for staff to complete the training and the survey. To curb these feasibility concerns, the PM developed the training video to be no more than three to four minutes, the pre and post-test were limited to five questions, and the ORIC survey chosen was limited to 12 Likert scale questions.

Implementation Plan

This EBP project followed the ACE Star Model of Knowledge Transformation. This model uses the five-point star to summarize the points of knowledge transformation (Stevens, 2013). The five consecutive points are discovery research, evidence summary, translation into guidelines, practice integration, and outcome evaluation (Song et al., 2021; Stevens, 2013). The PM conducted preliminary research on the problem in the discovery research step. The evidence summary step involved synthesizing the evidence found. In step three, translation into guidelines, the PM developed the plan for implementing the ORIC scale and educating the staff on the proposed change. The nursing staff completed the education and the ORIC survey in step four, practice integration. In the final evaluation step, the PM analyzed the data to determine the change in knowledge of PPD and screening and the staff's perceived organizational readiness for implementing this new screening protocol.

Measures, Tools, and Data Plan

The ORIC scale was used to determine the readiness for change (see Appendix B). This tool uses a five-point Likert scale with specific questions to assess change commitment and efficacy. Change commitment refers to the motivation of an organization's members to implement change as a collective (Sharma et al., 2018; Shea et al., 2014). Change efficacy refers to the perceived ability of the members to implement the change, considering the knowledge, resources, and situational factors (Sharma et al., 2018; Shea et al., 2014). The ORIC scale is a reliable and valid tool for assessing these two facets of organizational readiness. In various psychometric assessments of the tool, Cronbach's alpha coefficient of the change commitment questions was 0.91 – 0.92, and that of the change efficacy assessment questions was 0.88 – 0.89 (Shea et al., 2014). A comparative fit index was also conducted, which yielded a result of 0.97 (Shea et al., 2014).

The five-point Likert scale ranges from "disagree," which would be assigned one point, to "agree," which would be assigned five points (Sharma et al., 2018). Therefore, the lowest possible score of 12 would indicate a low level of organizational readiness, while a maximum score of 60 would indicate a very high level of organizational readiness. The nursing staff was asked to complete the ORIC survey voluntarily and anonymously via REDCap. Individual, work environment and organizational factors can influence organizational readiness, so questions regarding years of experience, job role, and shift worked were added to the survey. The PM used descriptive analysis to analyze participant characteristics, overall scores, and scores for each subscale of questions (change commitment and change efficacy). A paired t-test was used to compare pre and post-test scores. Analyses were performed using Microsoft Excel version 2207 and IntellectusStatistics.

Timeline

The doctor of nursing practice (DNP) project took place over four months, including implementation and analysis. Implementation began in July 2022 after IRB approval, and the final defense and dissemination will occur in November 2022. A Gantt Chart was used to show the timeline of this DNP project (see Appendix C). As noted in the Gantt Chart, the pre-test, recorded training video, and post-test was available for staff to complete over two weeks. The organizational readiness survey was initially open for staff to complete over the next two weeks. However, there was low participation for this part of the project, so the readiness survey was left open an additional two weeks. During project implementation, the PM checked data every week to evaluate completion rates and answer any questions staff may have. After the project implementation phase, the PM spent four weeks compiling and analyzing the data. The remaining time was spent drafting the final paper and getting feedback from the committee. The PM will make adjustments based on the committee chair's review and complete the final paper. Finally, the PM will disseminate the project's results to unit staff and present the final defense on the scheduled date.

Budget

Table 1 includes the projected expenses and revenue for this project. The PM calculated costs based on national salary averages and each staff member's projected time for completing the pre-test, training, post-test, and survey. A time of ten minutes was allotted for staff to complete the pre-test, training, and post-test on PPD screening and referrals. An additional time of five minutes was allotted for staff to complete the organizational readiness survey. Other cost considerations include the cost of paper copies of the flyers and time the DNP student spent developing the training video. The project was not projected to produce revenue for the

organization. However, there are no new expenses required to implement this tool, and strategic use of the ORIC scale can ensure that costly changes are implemented successfully.

Table 1

Project Expenses/Revenue

Project Expenses		
Salaries/Wages	**Monthly**	**Total**
Nurse	$ 372.00	$ 372.00
Social Worker	$ 12.00	$ 12.00
Total Salary Costs		**$ 384.00**
Startup Costs		
Flyer copies	$ 15.36	$ 15.36
Total Startup Costs		**$ 15.36**
Operational Costs		
N/A		0
Total Project Expenses	$ 399.36	**$ 399.36**
Program Revenue		
Revenue Generation	**Monthly**	**Total**
N/A	0	0
Total Project Revenue	0	**0**
Program Benefit/Loss		
Total Revenue	0	0
Less Expenses	$ (399.36)	$ (399.36)
Total Program Benefit/Loss	$ (399.36)	**$ (399.36)**

Protection of Human Subjects

Participation in this study was voluntary, and there is little to no risk to participants for completing the readiness survey or pre and post-test. No personally identifiable information was asked of the participants. The descriptive characteristic questions included information about job title, shift, and years of experience. There are no conflicts of interest for this project. The project required IRB review prior to implementation and was exempt.

Results

Pre-test – Post-test

For part one of this project, NICU staff were asked to complete a pre-test, a PPD training video, and a post-test via REDCap. The pre and post-test consisted of the same five questions and were available for two weeks for staff to complete. The overall response rate for the pre-test – post-test portion of the project was 40% (18/45). However, three of the 18 participants did not complete the post-test and were therefore not included in the data analysis. The mean pre-test score of the remaining 15 participants was 66.67 ± 22.25. The mean post-test score was 88 ± 16.56. The two-tailed paired samples *t*-test was significant based on an alpha value of .05 ($p = .003$), indicating that the post-test scores were significantly higher than the pre-test scores.

ORIC Scale

For part two of the project, the PM asked participants to complete the ORIC scale and questions regarding their job characteristics. Only those who completed part one were able to participate in part two. The scale was initially available for two weeks for staff to complete; however, two additional weeks were added due to a low response rate. Ultimately, the response rate for part two of the project was 20% (3/15). The PM calculated frequencies and percentages for the descriptive characteristics categories of job title, shift, and years of experience (see Table 2). Staff nurse was the most frequently observed job title category (n = 3, 100.00%). The most frequently observed shift category was nights (n = 2, 66.67%). The most frequently observed categories of years of experience were 0-3, 4-6, and 11-15, each with an observed frequency of 1 (33.33%). Summary statistics were calculated for the total ORIC scale score and for each ORIC subscale: change commitment and change efficacy (see Table 3). The mean total ORIC scale score was 51.67 ± 7.64, indicating a high level of organizational readiness among participants. The mean score for the change commitment subscale was 22.33 ± 2.52, and that of the change efficacy subscale was 29.33 ± 5.13.

Table 2

Frequency for Descriptive Categories

Variable	*n*	%
Title		
Staff nurse	3	100.00
Nurse Manager	0	0
Social Worker	0	0
Case Manager	0	0
Other	0	0
Shift		
Mornings	1	33.33
Evenings	0	0
Nights	2	66.67
Years of Experience		
0-3	1	33.33
4-6	1	33.33
7-10	0	0
11-15	1	33.33
>15	0	0

Note. Due to rounding errors, percentages may not equal 100%.

Table 3

Summary Statistics for ORIC Scale

Variable	***n***	***M***	***SD***	***Min***	***Max***
Total Score	3	51.67	7.64	45	60
Commitment Subscale	3	22.33	2.52	20	25
Efficacy Subscale	3	29.33	5.13	25	35

Note. *n* = number of participants, *M* = mean, *SD* = standard deviation

Strengths and Limitations

This project's strengths lie in using a validated assessment tool for organizational readiness. The ORIC is proven to be a reliable and valid way to measure readiness among organizational members. It was free to use, simple to implement, and easy to analyze. Limitations include low participation and limited generalizability. Less than half of the NICU staff participated in part one of the project, and there were only three participants in part two.

Low participation, along with the project being focused only on NICU staff and implementing a PPD protocol, contributes to the limited generalizability of the results.

Discussion

To this author's knowledge, this is the first evidence-based project to examine organizational readiness for implementing a postpartum depression screening protocol in the NICU. While there were only three participants for the ORIC scale, the results showed a high level of organizational readiness among NICU staff, particularly in the area of change commitment. The mean ORIC scale score was similar to previous studies. Geerlings et al. (2020) conducted an ORIC study at six different sites, three of which had score means ranging from 52.25 to 56.88. They also saw response rates similar to this study, ranging from 23 to 35% (Geerlings et al., 2020). Future EBP projects using the ORIC will need to develop ways to encourage staff participation to get a clearer picture of overall readiness.

Implementing a PPD screening protocol in the NICU should be a priority based on PPD prevalence and the consequences of untreated PPD (Murthy et al., 2021; Vaughn et al., 2019). However, prior studies found that administrative buy-in and perceived implementation priority were among the barriers to implementation (Murthy et al., 2021). As previously mentioned, successful change implementation is more likely when change readiness is high. Results from the ORIC can help inform unit leaders of not only overall staff readiness to implement change but specific determinants of change readiness.

Conclusion

Postpartum depression is the most common postpartum complication and is largely undiagnosed or untreated. NICU mothers are among the populations with the highest PPD risk, so screening is imperative. This EBP project aimed to educate NICU staff on PPD and screening

and assess organizational readiness in NICU staff before implementing a PPD screening protocol. While use of the ORIC scale was nominal and therefore not generalizable, participants who completed the scale showed a high level of organizational readiness. These results can help ensure the sustainability of change efforts. Due to the critical nature of PPD screening, similar organizations should consider using this instrument to assess staff readiness before implementing this new process. Leaders must address low-scoring determinants of readiness before proceeding with the change to ensure its success.

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Appendix A:

Evidence Table

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
Article 1: Geerligs, L., Shepherd, H. L., Butow, P., Shaw, J., Masya, L., Cuddy, J., The ADAPT Program Group, Rankin, N. M. (2021). What factors influence organisational readiness for change? Implementation of the Australian clinical pathway for the screening, assessment and management of anxiety and depression in adult cancer patients (ADAPT CP). *Supportive Care in Cancer*, *29*(6), 3235–3244. https://doi.org/10.1007/s00520-020-05836-9 **Evidence level:** III – Mixed method study **Quality:** B – Good: adequately describes analysis plan and data results, small sample size, uses validated tool	**Design**: convergent mixed methods design **Sample**: convenience sample of cancer center staff **Setting**: 3 cancer centers in major cities and 3 centers in the inner regional areas in Australia **Framework**: Promoting Action Research in Health Services **Measures**: (1) Assess self-reported organizational readiness for change at commencement of ADAPT CP implementation (2) Identify factors associated with any differences in levels of organizational readiness across services (3) Identify factors specific to the introduction of a psycho-oncology intervention. **Analysis Plan**: descriptive statistics for quantitative data and thematic analysis for qualitative data **Procedure**: After informed consent, data was collected	**Conclusion validity:** Reasonable – results in line with existing frameworks, measured what was intended, used 6 different cancer centers but overall small sample size **Internal validity**: Fair – not a controlled study but measures what was intended using a validated tool. Qualitative data could vary **External validity**: Fair – first study of its kind using mixed methods of data collection on organizational readiness, small sample size **Construct validity**: The ORIC has been validated for use in real-world hospital settings. **Reliability**: The ORIC is a proven reliable tool **Precision**: $r = 0.991$, $p < 0.001$	Response rate for the quantitative survey varied from 23 to 35%. There was a significant correlation between the two ORIC subscales ($r = 0.991$, $p < 0.001$), indicating that services high in change commitment were also high in change efficacy. Qualitative analysis highlighted five key areas: culture, flexibility, beliefs about efficacy and sustainability, engagement and preparation.	Levels of organizational readiness were related to distinct qualitative themes. Targeting these issues in services where readiness is mid-range or low prior to full-scale roll-out may improve staff levels of confidence and efficacy in implementing psycho-oncology-focused interventions.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	at baseline, after 3 months of pre-implementation preparation and prior to full roll-out.			
Article 2: Shea, C. M., Jacobs, S. R., Esserman, D. A., Bruce, K., & Weiner, B. J. (2014). Organizational readiness for implementing change: A psychometric assessment of a new measure. *Implementation Science, 9*(7), 1-15. https://doi.org/10.1186/1748-5908-9-7 **Evidence level:** III – Exploratory study **Quality:** A – good: establishes validation and reliability of new readiness tool, uses several means of testing, performed 4 different studies, limitations discussed	**Design**: exploratory study; between-subjects design; **Sample**: convenience sample of 98 students; convenience sample of 140 students; convenience sample of 311 international non-governmental organizational staff **Setting**: university located in the Southeastern United States **Framework**: Weiner's theory of organizational readiness for change **Measures**: conducted four studies to assess the psychometric properties of ORIC **Analysis Plan**: descriptive statistics, ANOVA, EFA, CFA, ICC **Procedure**: (1) Study participants were randomly assigned to complete one of two web-based surveys and participants rated the extent to which they thought each item reflected each construct in the survey (2) study participants read four randomly assigned vignettes and then rated	**Conclusion validity**: Reasonable – ORIC was found to be valid and reliable for measuring organizational readiness **Internal validity**: Good – selection bias due to sampling **External validity**: Good – validity established, limited generalizability as sample was only staff and college students in health programs **Construct validity**: CFI = 0.97, TLI = 0.96. Alpha coefficients for the four-item Change Commitment Scale and the five-item Change Efficacy Scale were 0.91 and 0.89, respectively **Reliability**: Scale was found to be reliable: Change Commitment Scale – ICC(1) of 0.72, and an ICC(2) of 0.98 ($p < 0.001$). Change Efficacy Scale – ICC(1) of 0.51, and an ICC(2) of 0.97 ($p < 0.001$) **Precision**: CFI and TLI ≥ 0.95; $p < 0.01$, $p < 0.001$	Content adequacy assessment indicated that the items developed to measure change commitment and change efficacy reflected the theoretical content of these two facets of organizational readiness and distinguished the facets from hypothesized determinants of readiness. Exploratory and confirmatory factor analysis in the lab and field studies revealed two correlated factors, as expected, with good model fit and high item loadings. Reliability analysis in the lab and field studies showed high inter-item consistency for the resulting individual-level scales for change commitment and change efficacy. Inter-rater reliability and inter-rater agreement statistics supported the aggregation of individual level readiness perceptions	We believe this measure will enable testing of theories about determinants and consequences of organizational readiness and, ultimately, assist healthcare leaders to reduce the number of health organization change efforts that do not achieve desired benefits. Although ORIC shows promise, further assessment is needed to test for convergent, discriminant, and predictive validity.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	readiness using ORIC (3) treated the 140 study participants as if they were employees of the hospital rating the hospital's readiness (4) online survey		to the organizational level of analysis.	
Article 3: Storkholm, M. H., Mazzocato, P., Tessma, M. K., & Savage, C. (2018). Assessing the reliability and validity of the Danish version of Organizational Readiness for Implementing Change (ORIC). *Implementation Science, 13*(78), 1-7. https://doi.org/10.1186/s13012-018-0769-y **Evidence level:** III – Exploratory study **Quality:** A – good: establishes validation and reliability of new readiness tool, uses several means of testing, performed 4 different studies, limitations discussed	**Design**: exploratory study **Sample**: convenience sample of all OB/GYN department staff and managers (n = 403) **Setting**: OB/GYN department at Aarhus University Hospital in Denmark **Framework**: not discussed **Measures**: validity and reliability of Danish version of ORIC in the hospital setting **Analysis Plan**: Cronbach's alpha, EFA and CFA **Procedure**: The 12-item ORIC instrument was translated into Danish and back-translated to English. Survey was sent via email to the staff.	**Conclusion validity:** Reasonable – Danish version of ORIC was found to be valid and reliable for measuring organizational readiness in hospital setting **Internal validity**: Good – selection bias due to sampling **External validity**: Good – validity established, limited generalizability as sample only included one department **Construct validity**: A two factor (commitment and efficacy), 11-item scale, of the Danish language ORIC was shown to be valid. Results of validation study: CFI = .95, RMSEA = .067, and CMIN/DF = 2.32 **Reliability**: The overall Cronbach's alpha was 0.88. **Precision**: $p < .05$	Response rate was 72%. A two factor (commitment and efficacy), 11-item scale, of the Danish language ORIC was shown to be valid (CFI = .95) and reliable (Cronbach's alpha 0.88) in a health care setting.	This ORIC showed acceptable validity and reliability as an instrument for measuring readiness for implementing organizational change in a Danish-speaking health care population. For health care managers interested in evaluating their organizations and tailor change strategies, ORIC's brevity and theoretical underpinnings could make it an appealing and feasible tool to develop more successful change efforts.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
Article 4: Storkholm, M. H., Savage, C., Tessma, M. K., Salvig, J D., & Mazzocato, P. (2019). Ready for the Triple Aim? Perspectives on organizational readiness for implementing change from a Danish obstetrics and gynecology department. *BioMed Central Health Services Research, 19*(517). 1-8. https://doi.org/10.1186/s12913-019-4319-3 **Evidence level:** V – Cross-sectional study **Quality:** B – Good: purpose is clearly stated, findings are relevant, recommendations clear, consistent results in a single setting,	**Design**: cross-sectional study **Sample**: convenience sample of all OB/GYN department staff and managers (n = 403) **Setting**: OB/GYN department at Aarhus University Hospital in Denmark **Framework**: not mentioned **Measures**: organizational readiness for implementing large-scale change **Analysis Plan**: descriptive statistics, *t*-test, non-parametric Kruskal-Wallis, 95% confidence interval **Procedure**: questionnaire was administered electronically to department staff and managers	**Conclusion validity:** Reasonable – discusses limitations of single department; good response rate (72%) **Internal validity**: Fair – speculation that some participant answers were influenced by staffing status (some interim employees); not all participants were actively involved in the change process **External validity**: Good – although only 1 department, the response rate was good and results can help understand organizational readiness **Construct validity**: The ORIC was translated and validated for Danish use **Reliability**: The ORIC is a proven reliable tool **Precision**: overall score 39, statistically significant results for managers and interim staff reporting higher readiness and change efficacy $p<.05$ and $p<.01$.	Response rate was 72%. The overall ORIC score had with a median of 39, with a median change commitment score of 19 and a median change efficacy score of 21. When controlled for age and gender, the analyses revealed that group (manager vs staff) and interim employment were significant predictors of the dependent variables change efficacy score and total ORIC score	More can be done to address the issue of change efficacy, such as strategies specifically targeted to address and deal with staff well-being, the uncertainty associated with large-scale change efforts, and developing increased clarity about "how to" deal with the complexity of change in health care improvement

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
Article 5: Adelson, P., Yates, R., Fleet, J-A., & McKellar, L. (2021). Measuring organizational readiness for implementing change (ORIC) in a new midwifery model of care in rural South Australia. *BioMed Central Health Services Research, 21*(368), 1-6. https://doi.org/10.1186/s12913-021-06373-9 **Evidence level:** V – descriptive study **Quality:** B – Good: purpose is clearly stated, findings are relevant but with some limited generalizability	**Design**: descriptive study **Sample**: convenience sample of 102 clinicians working in the model of care **Setting**: rural Australian maternity service area **Framework**: Weiner's organizational theory **Measures**: readiness for change amongst the midwives, nurses and doctors transitioning to the new model of care **Analysis Plan**: descriptive analysis, Cronbach's alpha, ANOVA **Procedure**: The survey was distributed anonymously in August 2019 to 102 clinicians	**Conclusion validity:** Reasonable – explains limitations: less than 60% response rate, used valid and reliable tool **Internal validity**: Fair – provides good data for change implementation, more info needed to assess predictive ability of the tool, some bias may exist **External validity**: Fair – not a random trail, uses convenience sampling, limited generalizability **Construct validity**: ORIC is validated and reliable for use in health care settings **Reliability**: ORIC is validated and reliable for use in health care settings **Precision**: (F 0.26, p = 0.86).	Response rate to the survey was 54.9% Cronbach's alpha test demonstrated an overall scale reliability coefficient of 0.96, indicating excellent scale internal consistency quality. Overall, participants had a mean ORIC score of 41.5 There was no statistically significant difference in the mean ORIC scores as assessed by ANOVA between the professional groups; MoC midwives, doctor, hospital nurse and hospital midwife	Clinicians transitioning to the new model of care were willing to embrace change and commit to the new model. If readiness for change is high, organizational members invest more in the change effort and exhibit greater persistence to overcome barriers and setbacks.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
Article 6: Spalluto, L. B., Lewis, J. A., Stolldorf, D., Yeh, V. M., Callaway-Lane, C., Wiener, R. S., Slatore, C. G., Yankelevitz, D. F., Henschke, C. I., Vogus, T. J., Massion, P. P., Moghanaki, D., & Roumie, C. L. (2021). Organizational readiness for lung cancer screening: A cross-sectional evaluation at a Veterans Affairs Medical Center. *Journal of the American College of Radiology*, *18*(6), 809–819. https://doi.org/10.1016/j.jacr.2020.12.010 **Evidence level:** V – Cross-sectional study **Quality:** B – Good: purpose is clearly stated, findings are relevant and may be translate to other VMACs, recommendations clear	**Design**: Cross-sectional study **Sample**: convenience sample of VAMC primary care and radiology team members **Setting**: radiology and primary care at the main hospital and community-based outpatient clinics at a single VAMC **Framework**: Consolidated Framework for Implementation Research **Measures**: organizational readiness for change and change valence among clinical providers, staff, and administrators **Analysis Plan**: descriptive statistics, SD and mean of scores, multivariable linear regressions to determine predictors **Procedure**: potential participants were emailed the internet-based questionnaire through Department of Veterans Affairs Research Electronic Data Capture	**Conclusion validity**: Reasonable – uses an established framework, limited generalizability, fair response rate for internet-based survey **Internal validity**: Fair – uses validated tool, however, it was not validated for this particular setting, selection bias **External validity**: Fair – limited generalizability but may translate to other VMACs, assessed two different service lines **Construct validity**: ORIC is valid and reliable, but not validated for this setting **Reliability**: ORIC is proven reliable **Precision**: mean 5.48, SD 1.42 versus 5.07, SD 1.22, $\beta = 0.37$, $P = .039$	53.9% overall response rate. Higher ORIC scores were associated with radiology versus primary care. Self-identified leaders in lung cancer screening had both higher ORIC and change valence scores.	Radiology health professionals have higher levels of readiness for change for implementation of LDCT screening than those in primary care. Understanding health professionals' behavioral determinants for change can inform future lung cancer screening implementation strategies.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
Article 7: Sharma, N., Herrnschmidt, J., Claes, V., Bachnick, S., De Geest, S., Simon, M. & Match^{RN} – Study Group. (2018). Organizational readiness for implementing change in acute care hospitals: An analysis of a cross-sectional, multicentre study. *Journal of Advanced Nursing, 74*(12), 2798-2808. https://doi.org/10.1111/jan.13801 **Evidence level:** V – secondary analysis of cross-sectional study **Quality:** A – Good: purpose is clearly stated, findings are relevant and adds to similar research, study performed in multiple units and includes comprehensive data collection	**Design**: secondary analysis of a Cross-sectional study **Sample**: convenience sample of 1,833 nurses from 124 units **Setting**: acute care hospitals in Switzerland **Framework**: Weiner's theory of organizational readiness for change. **Measures**: (1) interhospital variations in nurse-reported ORIC since the introduction of SwissDRGs (2) associations between nurse-reported ORIC and individual, work environment and organizational characteristics. **Analysis Plan**: descriptive statistics, interclass correlations for unit and hospital ORIC variations, liner mixed effect regression model for associations between ORIC and individual factors **Procedure**: RNs were asked to rate 12 items on a five‐point Likert‐type scale ranging from "disagree" (1) ‐ "agree" (5). Nurses were asked to specify their highest education level,	**Conclusion validity**: Reasonable – limited generalizability, small sample size, used valid tools **Internal validity**: Good – cross-sections study but sampled 1,833 from 124 units, used validated tools, adds ecological perspectives, some selection bias **External validity**: Fair – comprehensive data collection of different perspectives, limited generalizability due to cross-sectional nature, small sample size **Construct validity**: ORIC has been validated **Reliability**: ORIC Cronbach's alpha was 0.87 **Precision**: 95% CI	The average response rate was 72.8% With respect to their levels of employment, more than half (58.2%) worked 90‐100%; fewer than half had worked early on their last shift. Change commitment was rated slightly higher than change efficacy on the five‐point Likert scale. For change commitment and change efficacy, variability was higher at the unit level than at the hospital level.	While organizational readiness scores vary among hospitals and units, they are positively associated with supportive leadership and a foundation for quality of care. Further research should consider organizational readiness as an important factor of change and ultimately of the quality of care.

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	length of nursing work experience in years, age in years, gender, level of employment, and work shift as individual factors			

Appendix B:

Organizational Readiness for Implementing Change Scale

	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree
People who work here feel confident that the organization can get people invested in implementing this change. *	☐	☐	☐	☐	☐
People who work here are committed to implementing this change. **	☐	☐	☐	☐	☐
People who work here feel confident that they can keep track of progress in implementing this change. *	☐	☐	☐	☐	☐
People who work here will do whatever it takes to implement this change. **	☐	☐	☐	☐	☐
People who work here feel confident that the organization can support people as they adjust to this change. *	☐	☐	☐	☐	☐
People who work here want to implement this change. **	☐	☐	☐	☐	☐
People who work here feel confident that they can keep the momentum going in implementing this change. *	☐	☐	☐	☐	☐
People who work here feel confident that they can handle the challenges that might arise in implementing this change. *	☐	☐	☐	☐	☐
People who work here are determined to implement this change. **	☐	☐	☐	☐	☐
People who work here feel confident that they can coordinate tasks so that implementation goes smoothly. *	☐	☐	☐	☐	☐
People who work here are motivated to implement this change. **	☐	☐	☐	☐	☐
People who work here feel confident that they can manage the politics of implementing this change. *	☐	☐	☐	☐	☐

Note. *Denotes a Change Efficacy question. **Denotes a Change Commitment question.

Appendix C:

Gantt Chart