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Organizational readiness for implementing change in acute care hospitals: An analysis of a cross-sectional, multicentre study

Narayan Sharma[1] | Jenny Herrnschmidt[2] | Veerle Claes[1†] | Stefanie Bachnick[1] | Sabina De Geest[1,3] | Michael Simon[1,4] | on behalf of the Match[RN] - Study Group*

[1]Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Basel, Switzerland

[2]Hôpital Fribourgoise, HFR, Meyriez-Murten, Switzerland

[3]Department of Primary Care and Public Health, Academic Center for Nursing and Midwifery, Leuven, Belgium

[4]Nursing Research Unit, Inselspital Bern University Hospital, Bern, Switzerland

Correspondence
Michael Simon, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Basel, Switzerland.
Email: m.simon@unibas.ch

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Abstract

Aim: To assess nurse-reported organizational readiness for implementing change in acute care hospitals.

Background: An organization's success at implementing new policies and programmes depends largely on its stakeholders' readiness for change. Organizational readiness is a multilevel, multifaceted construct associated with staffing, leadership and quality of care.

Design: This is a secondary analysis of the cross-sectional multicentre "Matching Registered Nurse Services with Changing Care Demands" study.

Methods: In 23 acute care hospitals across Switzerland, 1,833 nurses working in 124 units completed a survey between September 2015 and January 2016. Organizational readiness was measured with two subscales: "change commitment" and "change efficacy". Work environment factors were assessed using the Practice Environment Scale of the Nursing Work Index.

Results: Nurses were positive about implementing change in their hospitals. Intraclass correlation was higher at the unit level than at the hospital level for both change commitment and change efficacy. Nursing foundation for quality of care and supportive leadership were positively associated with readiness, change commitment and change efficacy. However, staffing and resource adequacy was positively associated only with change efficacy. No association was found with standardized staffing.

Conclusion: 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.

KEYWORDS
commitment, efficacy, nurses, readiness for change, secondary analysis, quantitative, work environment

*See Appendix 1.
†Deceased.

1 | INTRODUCTION

Over the past decade, change has been a new normal for the global healthcare sector. Health care undergoes a dramatic and fundamental change in business, clinical and operating models (e.g., healthcare spending, public/private partnerships, innovations and demographic changes) through their policies, programmes and reforms to deliver efficient, effective and equitable care (Maruthappu, Hasan, & Zeltner, 2015; Morris, 2016). Ageing and growing populations, chronic diseases, care quality regulations, empowered consumers, innovative treatments and technologies fuel the changes (Morris, 2016). All these changes are leading to rising costs and reforms, such as activity-based funding systems (e.g., health reform agreement, diagnosis-related groups [DRGs]) which are used in some of the healthcare systems to contain costs and improve quality of care (Geissler, Quentin, Scheller-Kreinsen, & Busse, 2011; Maruthappu et al., 2015). Now, healthcare change and reforms have also introduced a new element of competition to health care. To remain competitive, hospitals have been forced to implement new policies, adapt their operations, modify workflows and implement guidelines and research findings. Along with healthcare changes and reforms, often patient safety and quality improvement efforts are intensified to maintain or improve quality of care in general (Phelps & Barach, 2014).

One vital factor that affects an institution's ability to respond to these changes is organizational readiness for implementing change (ORIC). Defined as the extent to which organizational members are psychologically and behaviorally prepared and motivated to implement change (Shea, Jacobs, Esserman, Bruce, & Weiner, 2014; Weiner, Amick, & Lee, 2008; Williams, 2011), ORIC gives a relevant perspective on whether and to what extent units and hospitals are able to adapt to a changing healthcare system and what factors might influence the ability of organization to change.

1.1 | Background

Weiner's theory on readiness for change emphasizes the multilevel construct of the concept on the individual, unit and organizational level (Weiner, 2009). It is also important to know how health professionals comprehensively conceptualize readiness for change. Holt, Helfrich, Hall, and Weiner (2010) highlight the readiness for change for healthcare professionals in three broad areas, that is, psychological, structural and levels of analysis (individual or groups). Psychological factors consist of healthcare professionals individual characteristics (e.g., change motivation between nurses and physician might be different) and structural factors (e.g., circumstances of change might differ between hospitals and care homes). The nurses are a large group of healthcare professionals, who need a special focus on change process (Dalton & Gottlieb, 2003). On the nurse-level study done by Caldwell, Roby-Williams, Rush, and Ricke-Kiely (2009) explain readiness for change is influenced by context, process and group or individual differences on nurses, which support multilevel construct of readiness for change. The change or reform in the healthcare system required hospitals to adapt their processes and structures to the new environment, therefore raising the overall interest in studying healthcare professionals including nurses on readiness for change. Now, as healthcare change is accelerating, competition increasing and access to information expanding, many healthcare organizations are trying to speed up their adaptation and innovation by centralized planning and tight control over resources (Child, 2015; O'Connor & Fiol, 2006). Moreover, implementation of change in healthcare provision is often triggered by policies aimed at improving patient safety and quality of care (Grol, Wensing, Eccles, & Davis, 2013).

Particularly in healthcare settings, appropriate working conditions and leadership actions are essential to convince healthcare professionals of the need for change (Grol et al., 2013; Hardison, 1998; Holt et al., 2010; O'Connor & Fiol, 2006). Here, organizational readiness is a critical precondition of policy and programme implementation. Furthermore, change implementation demands concerted effort, including active collaboration between interdependent individuals

Why is the research or review needed?

- As all healthcare organizations regularly adapt and implement new policies, programmes and reforms such as diagnosis-related groups, organizational readiness is an important precondition for successful change.
- Previous theories and the research on readiness for change suggest that multilevel, multifaceted organizational readiness is valuable in health care.
- The empirical approach of examining associations between readiness for change and characteristics of the nursing work environment could show that a positive work environment increases changes adaptively in the hospitals.

What are the key findings?

- The results highlight that nurse-reported organizational readiness is a multilevel construct that varies between hospital and unit levels.
- Organizational readiness for change implementation is positively associated with unit-level characteristics, that is, supportive leadership and nursing foundation for quality of care.

How should the findings be used to influence policy/practice/research/education?

- These findings could guide hospital managers and policymakers to consider organizational readiness as a prerequisite for change implementation.
- The link between work environment characteristics and readiness for change suggest that a positive work environment supports successful change.

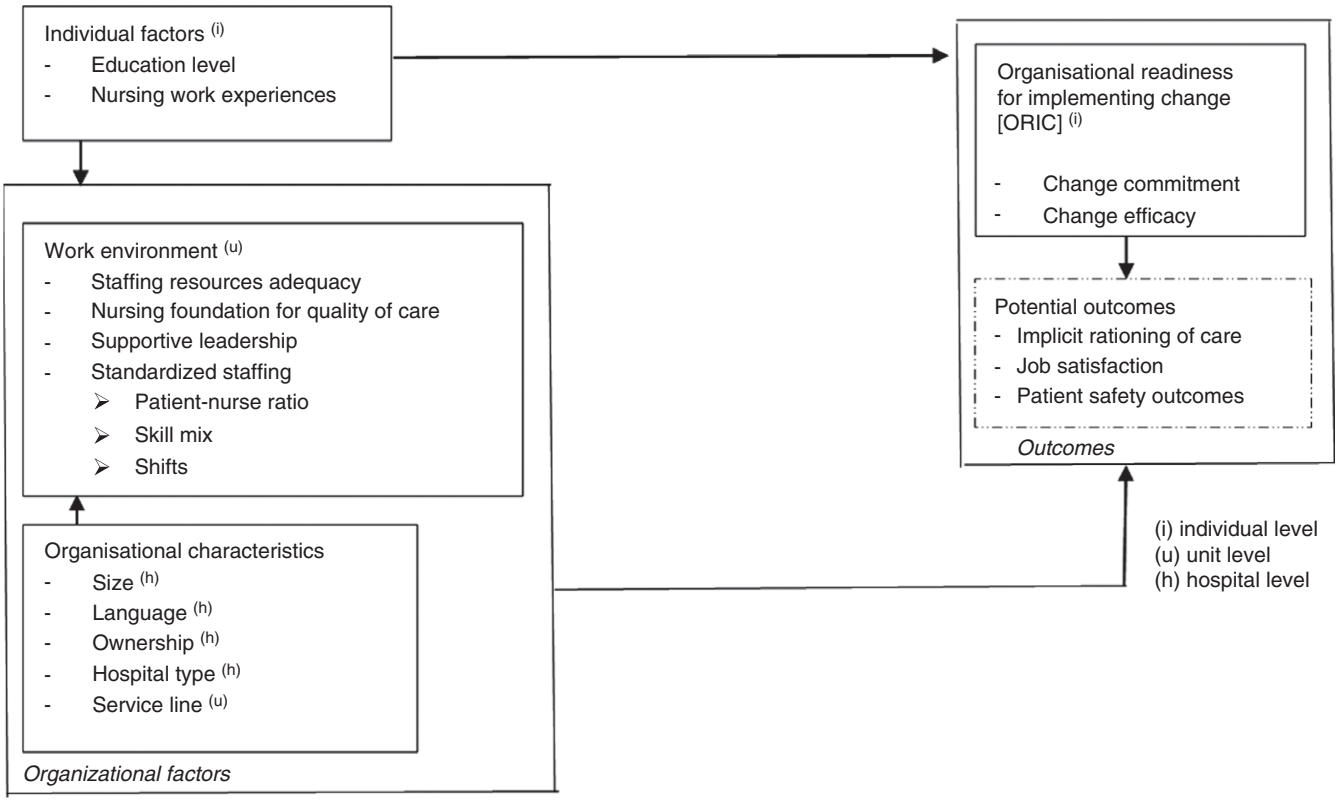

FIGURE 1 Factors influencing ORIC and potential outcomes (dashed box–not part of this study–and hospital level characteristics are controlled)

and working units (O'Connor & Fiol, 2006; Weiner, 2009). Reflecting the presence and proportions of these conditions, ORIC is a multilevel construct assessed at the individual (nurses), departmental (unit) and organizational (hospital) levels (Holt et al., 2010).

As a multifaceted construct, ORIC relies on the prevalence of two subconstructs: "change commitment," that is, the will or power to change; and "change efficacy," that is, a shared belief in the capacity to implement organizational change (Shea et al., 2014; Weiner, 2009; Weiner, Lewis, & Linnan, 2009). However, problems commonly arise when organizations attempt to implement complex changes before enough of their members share the necessary sense of readiness (Weiner, 2009).

Considering motivational theories, change commitment is a function of change valence, that is, the collective ability of individuals to support change in an organization (Ramlall, 2004; Shea et al., 2014). On the other hand, considering social cognitive theories, change efficacy is a function of those same members' cognitive appraisal of their task demands, resource availability and work environment (Bandura, 2001; Weiner et al., 2008). Thus, from an individual, psychological and organizational perspective, in addition to depicting change readiness, the ORIC construct helps illustrate how and where organizations can change and adapt to major health policies and reforms such as the introduction of DRGs.

Motivational and social cognitive theories guide us to consider how individual (e.g., work experiences) and organizational factors (e.g., work environment) could influence ORIC levels (Figure 1). However, as increased, ORIC should enable organizations to implement and adapt practice changes more quickly and more successfully, it is more likely that potential process and outcome measures including implicit rationing of nursing care, job satisfaction and patient safety outcomes would also improve.

Apart from psychological and behavioural factors, structural, contextual and work environment factors may be associated with ORIC, for example, nurse staffing, financial and technical resources (Benzer, Charns, Hamdan, & Afable, 2017; Cunningham et al., 2002; Lehman, Greener, & Simpson, 2002). Jones, Jimmieson, and Griffiths (2005) and Ingersoll, Wagner, Merck, and Kirsch (2002) discussed how certain factors of organizational cultures—especially interprofessional relations, supportive leadership and open organizational systems—are more likely to foster positive attitudes towards change. Moreover, contextual factors, for example, policies, plans and organizational resources, leadership and participative planning processes are associated with successful organizational change (Attieh et al., 2014; Eby, Adams, Russell, & Gaby, 2000; Weiner, 2009). Mangundjaya (2013) found a significant correlation between supportive leadership and readiness for change, especially about change commitment.

In addition to contextual and structural factors, individual factors influence readiness for change (Benzer et al., 2017). For example, Madsen, Miller, and John (2005) posited that education has a positive influence on readiness for change; however, Squires, Estabrooks, Gustavsson, and Wallin's (2012) systematic review indicated that

education's impact on research use applied only to nurses with graduate degrees.

Building on these researchers' foundations, ORIC levels may eventually be used to assess individual, work environment and organizational factors that may be associated with readiness for change. A sufficient level of ORIC on health professionals (e.g., nurses) is a basic requirement for an effective implementation of healthcare policies, reforms and new guidelines (e.g., SwissDRGs and evidence-based nursing).

2 | THE STUDY

2.1 | Aims

To assess nurse-reported ORIC in acute care hospitals:

1. To assess interhospital variations in nurse-reported ORIC since the introduction of SwissDRGs.
2. To examine any associations between nurse-reported ORIC and individual, work environment and organizational characteristics.

2.2 | Design

This is a secondary analysis of data from the ongoing Matching Registered Nurse Services with Changing Care Demands (Match^{RN}) study (Bachnick et al., 2017). Match^{RN} is a cross-sectional multicentre study, which aims to assess how structures, processes and patient and nurse outcomes have changed since the implementation of SwissDRGs in 2012.

2.3 | Participants, settings and sample

This analysis is based on survey data furnished by Registered Nurses (RNs) from 124 medical, surgical and medical–surgical (mixed) units in 23 acute care hospitals across Switzerland's three linguistic (German-, French- and Italian-speaking) regions. The Match^{RN} study is an ongoing health service research project (2015–2018) evaluating the effects of SwissDRG (implemented in 2012) in a national sample of acute care hospitals. Baseline (pre-SwissDRG implementation) nurse and patient survey data from 2010 were originally collected for the Swiss arm of the RN4CAST (Nurse forecasting in Europe) study (Sermeus et al., 2011). To collect DRG postimplementation data, nurses and patients were surveyed in the same units and hospitals as the RN4CAST study, applied a quota sampling strategy to include 35 hospitals across the German, French and Italian language Swiss regions. Therefore, all 35 participating RN4CAST acute care hospitals were invited to participate in Match^{RN} study, of which 21 (60%) agreed to participate, while two more hospitals volunteered to participate (Total N = 23 hospitals) (Dhaini et al., 2018). The average response rate for the nurse survey was 72.8% across 23 hospitals requested for the survey. Further details about the Match^{RN} study are described in the Match^{RN} study protocol (Bachnick et al., 2017). For the current study, a sample of 1,833 RNs participated in the nurse survey, providing individual, work environment and ORIC data.

2.4 | Data Collection

2.4.1 | Organizational readiness for implementing change

To assess ORIC, RNs were asked to rate 12 items on a five-point Likert-type scale ranging from "disagree" (1) - "agree" (5). Two subscales assessed change commitment (five items) and change efficacy (seven items) (Lehman et al., 2002; Shea et al., 2014). As we were interested in a generic ORIC form, we defined change as "alterations to clinical practice, such as the implementation of research results, the improvement of processes, or the introduction of new procedures or technologies, in practice development and quality improvement projects." Our statistical analyses used average sum scores from the Likert scale values of the respective change commitment and change efficacy subscales.

2.4.2 | Individual factors

Nurses were asked to specify their highest education level and length of nursing work experience in years as primary individual factors. In addition, we used age in years, gender, level of employment (90–100%, 51–89%, 50% and below) and work shift (morning, late and night) as individual factors (Table 1).

TABLE 1 Characteristics of nurses under study (N = 1,833) and the ORIC outcomes

	N	%	Mean	*SD*
Gender female	1,610	89		
Age in years	1,788		35.3	10.6
Nursing education				
Higher technical school	1,315	71.7		
University degree	518	28.3		
Level of employment				
90–100%	1,044	58.2		
51–89%	462	25.8		
50% and below	288	18.9		
Nursing work experience (years)				
Career			11.1	10.1
In this hospital			8.4	8.5
Work shift				
Early	880	48.3		
Late	603	33.1		
Night	340	18.7		
ORIC (scale 1–5)				
Change commitment	1,786		3.64	0.61
Change efficacy	1,792		3.54	0.63

Note. 1, Strongly disagree; 2, Disagree; 3, Neither; 4, Agree; 5, Strongly agree; n, valid cases.

2.4.3 | Work environment

The nursing work environment in Switzerland is diverse from the ecological perspective (i.e., language regions, culture and nurses with a different background) influencing overall Swiss health system (Hickey, Harrison, & Sumsion, 2012). To assess the diverse nursing work environment, we used three subscales from the Practice Environment Scale of the Nursing Work Index (PES–NWI) (Lake, 2002): "Staffing and resources adequacy" (four items); "Nursing foundation for quality of care" (nine items); and "Nurse manager ability, leadership and support of nurses (supportive leadership)" (four items). All items were rated on a four-point Likert-type scale (range: 1 [strongly disagree]–4 [strongly agree]).

To assess whether staffing was associated with ORIC, we used a standardized staffing measure as a unit-level variable: empirical Bayes estimates of a generalized linear mixed effect model predicting the number of patients per nurse on the last shift worked. The number of patients was adjusted for shift type (early, late or night), skill mix (proportion of RNs) and the number of patients requiring support in all activities of daily living and hourly or more frequent observations or treatments. This staffing variable is "standardized" because empirical Bayes estimates are centred with an overall mean of zero. For more intuitive metrics we offer skill mix, that is, the proportion of RNs in relation to total care providers and the patient-to-nurse ratio by shift (extracted from the standardized staffing model) (Table 2).

2.4.4 | Organizational characteristics

Four hospital-level characteristics were examined: hospital size, that is, number of beds (small: <100; medium: 100–300; large: 301–600, extra-large: >600), language region (German, French, Italian), hospital type (university hospital, general, district) and ownership status (private, nonprofit, public). At the unit level, we used three classifications: medical, surgical and medical/surgical (mixed) (Table 2).

2.5 | Ethical considerations

At all hospitals participating in the Match^{RN} study, written informed consent was given by each participating unit's chief nursing officer (Bachnick et al., 2017). Nurse participants received the questionnaire with a cover letter introducing the study's purpose, explaining and guaranteeing the protection of their anonymity and emphasizing that participation was voluntary. Because the survey was conducted following Swiss federal regulations about anonymity, the relevant ethics committee ruled the study exempt from their oversight (Cantonal ethics committee Beider Basel, Ref. Nr. EKNZ UBE 15/59).

2.6 | Data analysis

Our analyses are based on two data sources. First, RNs completed a survey questionnaire to assess individual factors and organizational characteristics relevant to their work environment and readiness for change. Second, to assess participating hospitals' characteristics, administrative data were obtained from Switzerland's Federal Statistical Office. Finally, data on participating hospitals' characteristics (capacity, language, ownership, hospital type) were combined with the nurse survey dataset for analysis. All hospitals and units received questionnaires (including return envelopes); unit coordinators distributed the questionnaires to all participating units' nurses. The Match^{RN} survey was administered between September 2015 and January 2016. To avoid the responded bias, there was mixing of

TABLE 2 Hospital and unit-level characteristics

	N	%	Mean	*SD*
Hospital level (*N* = 23)				
Number of hospitals				
German	15	65.2		
French	4	17.4		
Italian	4	17.4		
Hospital type				
University hospital	4	17.4		
General hospital	16	69.6		
District hospital	3	13.0		
Ownership status				
Private	3	13.0		
Nonprofit	2	8.7		
Public	18	78.3		
Hospital size (beds)				
<100 beds	3	13.1		
100–300 beds	10	43.5		
>300–600 beds	5	21.7		
>600 beds	5	21.7		
Unit level (*N* = 124)				
Service line				
Medical	62	50.0		
Surgical	54	43.5		
Mixed	8	6.5		
Work environment				
Staffing and resource adequacy (scale 1–4)			2.56	0.44
Nursing foundation for quality of care (scale 1–4)			3.22	0.25
Nurse manager ability, leadership, and support of nurses (scale 1–4)			3.10	0.39
Standardized staffing			−0.007	0.14
Skill mix (in %)			60	9
Patient–Nurse ratio by the shift				
Morning			6.9	1.96
Afternoon			8.7	0.90
Night			16.9	1.00

Note. 1, Strongly disagree; 2, Disagree; 3, Agree; 4, Strongly agree; n, Valid cases; *SD*, Standard Deviation.

items between the scales of change commitment and change efficacy. Match^{RN} survey questionnaire was designed including some of the negatively formulated items and those items were adjusted before the data analysis.

2.7 | Data analysis

As appropriate, descriptive statistics were used to calculate frequencies, percentages, means and standard deviations relating to individual factors, organizational characteristics and the work environment, and to explore the two ORIC scales' data. We were interested in unit- and hospital-level ORIC variations, which were assessed based on intraclass correlations (ICC) determined via the rptR repeatability estimation package in R to depict the studied hospitals' and units' heterogeneity (Stoffel, Nakagawa, & Schielzeth, 2017). ICCs above 0.05 at the unit and the hospital levels indicate substantial variation (Snijders & Bosker, 2012). All independent variables except individual factors were aggregated at the unit level using means. We used linear mixed effect regression models to explore possible associations between ORIC and individual factors, organizational characteristics and the work environment. To assess the uncertainty of the effect estimates we computed 95% confidence intervals for the β coefficients and *p*-values.

We performed sensitivity analyses to evaluate the robustness of the models of change commitment and change efficacy. Sensitivity analyses include hospital-level characteristics (capacity, language region, ownership status and hospital type), unit-level characteristics (work environment and service line) and individual-level characteristics (education level, nursing experience, age and sex) as a multilevel construct of readiness for change (Caldwell et al., 2009; Holt et al., 2010; Weiner, 2009). As no associations were indicated by hospital-level characteristics (capacity, language region, ownership status and hospital type) and individual-level characteristics (age and sex) and no change in the overall results. Thus, these variables were not included in the final models. Finally, we used education level and length of work experience as individual factors, service line (medical, surgical or mixed) as an organizational characteristic (unit level) and three PES-NWI (unit level) subscales and standardized staffing data to assess associations with readiness for change (Benzer et al., 2017; Holt et al., 2010; Weiner, 2009). All analyses were computed with R version 3.3.3 statistical software (R Core Team, 2017) for Microsoft Windows.

2.8 | Validity and reliability

Organizational readiness for implementing change with change commitment and change efficacy are established scales assessed by Shea et al. (2014) using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). As this was the first use of ORIC commitment and efficacy scales in all three of Switzerland's language regions, a Mokken analysis was conducted to assess the scales' unidimensionality (Dima, 2018; Stochl, Jones, & Croudace, 2012). Furthermore, Stochl et al. (2012) suggest that Mokken scaling can be applied as a secondary analysis approach to scrutinize the appropriateness and performance of scales relying on stronger statistical assumption. For change commitment, the mean Loevinger's H was 0.64 (German: 0.64; French: 0.57; Italian: 0.67); for change efficacy it was 0.58 (German: 0.59; French: 0.47; Italian: 0.58). Both subscales are sufficiently homogeneous to be considered unidimensional measures. Checking the ORIC scales' reliability, Cronbach's alpha was 0.87 (0.86–0.88) for change commitment and 0.87 (0.86–0.88) for change efficacy, indicating strong internal consistency for both. Checking the PES-NWI scales' (Lake, 2002) reliability, Cronbach's alpha was 0.83 (0.82–0.84) for the staffing and resources adequacy scale, 0.80 (0.79–0.81) for the nursing foundation for quality of care scale and 0.79 (0.78–0.81) for the supportive leadership scale, indicating strong internal consistency (Tavakol & Dennick, 2011).

All instruments with English language scales and items were translated first into German via a modified Brislin protocol (a systematic translation process) (Jones, Lee, Phillips, Zhang, & Jaceldo, 2001); the French and Italian versions were translated based on the German version, also using forward–backward translation (Bachnick et al., 2017; Squires et al., 2013). To ensure comprehensibility and to check for response patterns, the entire German and French versions of the nurse questionnaire were pilot tested with nurses with a range of educational levels and the experienced nurses reviewed the Italian language versions (Bachnick et al., 2017). Furthermore, clinical and research nurses proficient in the source and target languages reviewed all questions and suggested cultural adaptations where applicable (Bachnick, Ausserhofer, Baernholdt, & Simon, 2018).

3 | RESULTS

3.1 | Description of the sample

This analysis of the Match^{RN} study included data of 1,833 RNs. The average response rate was 72.8% (30.3–90%) across the 23 hospitals and 124 units that participated. Of the participating nurses, 89% were female, with a mean age of 35.3 (*SD* 10.62) years. More than a quarter (28.3%) had a university degree and approximately 11 (*SD* 10) years of professional nursing experience. 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 (Table 1). Of the 23 participating hospitals, 15 were German speaking; 18 were publicly owned; four were university hospitals; and the mean hospital size was 365 beds. Half of participating units were medical (Table 2).

3.2 | Organizational readiness for implementing change

Overall, nurses reported slightly positive attitudes towards implementing change in their hospitals. Change commitment was rated slightly higher (mean: 3.6; *SD*: 0.6) than change efficacy (mean: 3.5; *SD*: 0.6) on the five-point Likert scale.

3.3 | Variability of organizational readiness for implementing change

For change commitment and change efficacy, variability was higher at the unit level (ICCs respectively 0.16 (95% CI 0.106–0.199) and 0.25 (95% CI 0.087–0.251) than at the hospital level (ICCs respectively 0.11 (95% CI 0.051–0.181) and 0.16 (95% CI 0.37–0.61) (Table 3).

3.4 | Factors influencing ORIC

Most work environment and individual factors were positively associated with ORIC (Table 4). Supportive leadership was positively associated with change commitment (β 0.40 (95% CI 0.27–0.53)) and change efficacy (β 0.49 (95% CI 0.37–0.61)). Similarly, the nursing foundation for quality of care was positively associated with change commitment (β 0.33 (95% CI 0.08–0.58)) and change efficacy (β 0.32 (95% CI 0.09–0.55)). However, staffing and resources adequacy was positively associated only with change efficacy (β 0.12 (95% CI 0.008–0.243)). Of the individual factors, nurses' education level (β 0.07 (95% CI 0.002–0.14)) and nursing work experience (β 0.004 (95% CI 0.001–0.006)) were positively (though weakly) associated with change commitment but had no apparent association with change efficacy. Standardized staffing and unit type were not associated with ORIC.

4 | DISCUSSION

This is one of the first studies to measure ORIC's associations with the nurse work environment from an ecological perspective in a sample of Swiss acute care hospitals. Key results indicate that Swiss acute care nurses have overall positive attitudes towards change commitment and change efficacy. Both change commitment and change efficacy were subject to substantial variation at both hospital and unit level. While staffing and resources adequacy was related only to change efficacy, the other two PES-NWI subscales (nursing foundation for quality of care and supportive leadership) were associated with both ORIC subconstructs. Furthermore, individual education and work experience were positively, but relatively weakly associated with change commitment, but not with change efficacy. Standardized staffing was associated with neither change commitment nor change efficacy.

TABLE 3 Variability of organizational readiness for implementing change

	Change commitment		Change efficacy	
	ICC (CI)	*SE*	ICC (CI)	*SE*
Hospital Level	0.114 (0.051–0.181)	0.034	0.161 (0.087–0.251)	0.044
Unit Level	0.156 (0.106–0.199)	0.025	0.245 (0.188–0.301)	0.029

Note. CI, 95%-Confidence interval; *SE*, Standard Error; *SD*, Standard Deviation.

The ICCs computed at the unit and hospital levels were above 0.05, indicating that ORIC is substantially explained at both levels (Kim, 2013; Krogstad, Hofoss, Veenstra, Gulbrandsen, & Hjortdahl, 2005; Snijders & Bosker, 2012), thus confirming the perspective of ORIC as a multilevel construct. Furthermore, the ICC quantifies the proportion of variance explained by a grouping (random) factor in multilevel/hierarchical data, which explains the relatively high heterogeneity of hospitals, units and nurses indicated in diverse Swiss ecological regions (Hickey et al., 2012; Siegmunt, 2016).

Swiss national and international comparative studies support the conclusion that Switzerland's hospitals offer high-quality nursing work environments (Aiken, Sloane, Bruyneel, van den Heede, & Sermeus, 2013; Desmedt, de Geest, Schubert, Schwendimann, & Ausserhofer, 2012); however, to date, the link between work environment factors and readiness for change has not been investigated. Our analyses indicated that the better the nursing work environment is rated the greater the readiness for change, thereby confirming earlier studies' results. Laschinger, Almost, and Tuer-Hodes's (2003) survey of 515 nurses indicated that leadership quality was predominantly responsible for the change. Moreover, Attieh et al. (2014) Delphi study and Cummings, Estabrooks, Midodzi, Wallin, and Hayduk (2007) nurse survey correlated supportive leadership with readiness for change and research use. In addition, Cronenwett et al. (2007) and Grol et al. (2013) both offered compelling arguments that quality of care and patient safety education create positive attitudes associated with readiness to implement change. Therefore, key components of the nursing work environment, for example, supportive leadership and nursing foundation for quality of care, enhance readiness for change.

Interestingly, we found an association between staffing and resources adequacy and change efficacy but not change commitment, that is, where nurses perceived adequate resources and staffing, they indicated higher change efficacy but not necessarily higher commitment. These results agree with Lehman et al. (2002) and Weiner et al. (2008) finding that well-trained staff with adequate resources have higher work-related efficacy and are more likely to adopt changes. Surprisingly, though, readiness for change was not associated with hospital-level characteristics or an objective measure of staffing, that is, standardized staffing.

At the individual level, education and nursing work experience were weakly associated with change commitment, that is, nurses with higher educational levels or university degrees tended to have higher commitment to change than their less-educated colleagues. This supports Madsen et al. (2005) conclusion that education increases readiness for change and Squires et al. (2012) finding that nurses with higher degrees have a more positive attitude towards research use, quality of care and skill enhancement. Similarly, we found that nurses with more nursing work experience have higher change commitment than those who are newer to the field.

This study used "Weiner's theory of organizational readiness for change" (2009) to examine determinants and levels of ORIC in Swiss hospitals. Organizational readiness offers a promising perspective on organizational change, as it helps identify situations where new policies can be successfully implemented while highlighting influencing

TABLE 4 Linear mixed effect regression models showing influencing factors for readiness for change

	Change commitment			Change efficacy		
	Estimate (CI)	*SE*	*p* value	Estimate (CI)	*SE*	*p* value
Intercept	1.341 (0.758–1.923)	0.302		0.623 (0.102–1.139)	0.266	
Individual factors						
Education level	0.070 (0.002–0.14)	0.035	0.046*	0.003 (–0.064 to 0.065)	0.034	0.924
Nursing work experience	0.004 (0.001–0.006)	0.001	0.011*	0.002 (–0.064 to 0.069)	0.001	0.127
Work environment						
Staffing and resource adequacy	–0.061 (–0.191 to 0.069)	0.068	0.369	0.125 (0.008–0.243)	0.06	0.037*
Nursing foundation for quality of care	0.332 (0.08 to 0.584)	0.131	0.011*	0.322 (0.096–0.551)	0.116	0.006**
Supportive leadership	0.396 (0.266–0.526)	0.068	<0.001***	0.492 (0.371–0.609)	0.06	<0.001***
Standardized staffing	0.008 (–0.241 to 0.255)	0.129	0.952	0.092 (–0.13 to 0.316)	0.114	0.419
Organizational characteristics						
Unit type, medical	–0.002 (–0.065 to 0.06)	0.032	0.939	0.007 (–0.05 to 0.063)	0.029	0.818
Unit type, mixed	–0.093 (–0.223 to 0.037)	0.068	0.172	–0.09 (–0.207 to 0.029)	0.06	0.135

Notes. For both models hospital characteristics were controlled (size, type, language and ownership).
Notes. CI, 95%-Confidence interval; *SE*, Standard error.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

factors. Moreover, Weiner's theory supports social cognitive and motivation theories to explain where and what types of changes are necessary, how greater organizational readiness can increase the odds of successful implementation and how patient safety and quality of care can be maintained or improved throughout the implementation process. For example, when ORIC is high, nurses are more likely to adapt to health policies such as the SwissDRGs, exerting greater effort, exhibiting greater persistence and cooperating more to increase efficiency, transparency and quality of care.

Finally, hospitals need to adjust their organizational structures and procedures alongside their clinical practices and policies to respond to constant change while meeting the increasing demand for high-quality care. To deal with ongoing adaptation, managers and change leaders need to take positively that high ORIC levels are essential to turn into action (Weiner, 2009). From the clinical perspective, successful change implementation frequently leads to improved patient outcomes and actual change in hospitals; and from the research perspective, key determinants of organizational readiness are linked to readiness for change (Wallin, 2009).

The current study's results will help managers and hospital leaders both to recognize readiness for change as an important element in change implementation strategies and to initiate targeted interventions to improve its determinants. Only nurses who are both fully committed and fully confident in their ability to adapt can implement the changes necessary to continuously improve outcomes not only for patients, that is, quality of care, but for themselves as well.

4.1 | Strengths and limitations

This study's most notable strength was the comprehensiveness of the data collected, which allowed an ecological perspective, that is, a detailed analysis of staffing, work environmental factors and organizational characteristics in relation to readiness for change. In the Swiss context of acute care hospitals since the 2012 implementation of SwissDRGs, the next logical step is to explore associations between readiness for change and quality of care.

In view of this study's limitations, these findings should also be interpreted with caution. Due to the cross-sectional design, for example, no causal links can be inferred. Therefore, longitudinal studies would be valuable to confirm the suggested relationships between readiness for change and nurse and patient outcomes that is, quality of care delivered and actual change in the hospitals. In addition, several potentially relevant relationships about hospital characteristics could not be reliably measured because of sample size limitations. We could only include nurses in our study even though, work environment and readiness for change are multiprofessional in nature.

5 | CONCLUSION

This study indicates that RNs in Swiss acute care hospitals generally have positive attitudes towards implementing change and that readiness for change is a multifaceted, multilevel construct showing its positive association on the unit and individual level. By helping determine organizations' ability to adapt to change, readiness for change assessment enables fuller preparation to implement measures whose benefits include improved efficiency, lower healthcare costs and improved quality of care. The relatively strong associations linking both change commitment and efficacy with supportive leadership and nursing foundation for quality of care shows that a positive work environment is an important precondition for change. The research reported here suggests a range of further studies concerning readiness for change—to determine, for example, whether it is an independent factor of change in clinical practice, whether it contributes to the quality of care and the extent to which it is a prerequisite for the implementation of new measures.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

ORCID

Narayan Sharma http://orcid.org/0000-0001-8698-5469
Stefanie Bachnick http://orcid.org/0000-0002-2747-3866

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APPENDIX 1

Michael Simon, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland; Nursing Research Unit, Inselspital University Hospital Bern, Switzerland Dietmar Ausserhofer, School for Health-Care Professionals Claudiana, Bozen, Italy, (Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland René Schwendimann, Head of Patient Safety, Directorate of Medicine, University Hospital Basel, Switzerland Cédric Mabire, Institute of Higher Education and Research in Healthcare – (IUFRS), Lausanne University Hospital, Switzerland Maria Schubert, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland; Nursing Research Unit, Inselspital University Hospital Bern, Switzerland Stefanie Bachnick, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland Narayan Sharma, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland) Sabina De Geest, Institute of Nursing Science (INS), Department Public Health (DPH), Faculty of Medicine, University of Basel, Switzerland; Academic Center for Nursing and Midwifery, Department of Primary Care and Public Health, KU Leuven, Belgium