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Occupational stress, burnout, and organizational readiness for change: A longitudinal study among HIV HCPs in China

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Abstract

Literature suggests that organizational readiness for change (ORC) could facilitate adaptation and implementation of new projects or practices in clinical settings. Limited data are available regarding the longitudinal associations between ORC and psychosocial conditions of HCPs. Using six waves of longitudinal data collected between 2013 and 2016 from 357 HIV HCPs in Guangxi China, we identify sociodemographic and occupational characteristics that impact ORC and examine how occupational stress and burnout affected ORC adjusting for potential cofounders. A mixed effect model was used to assess the associations of ORC with psychosocial variables controlling for key background variables, and within-cluster and within-subject correlation over time. The ORC level was stable over time. Ethnical minority HCPs reported lower ORC compared with those of Han ethnicity. HCPs with administrative responsibility reported significantly lower ORC compared with the ones without administrative responsibility. HCPs with high school education attainment showed lower ORC compared to those with some college education. ORC level was negatively associated with occupational stress and burnout controlling all the background variables. It is important to integrate reducing stress and alleviating burnout in workplace into efforts of promoting the acceptation and adaptation of new intervention.

Keywords

Occupational stress; burnout; organizational readiness for change; longitudinal data; HCPs

INTRODUCTION

As a bridge between research and practice, an organization decides to adopt an intervention, selects and trains personnel, and provides facilitative administration support to accomplish the intervention (Holt, Armenakis, Feild, & Harris, 2007). Effective implementation of evidence-based interventions (EBI) thus often requires a specific organizational change corresponding to the intervention project (Austin & Ciaassen, 2008). The organizational readiness for change (ORC) may influence installing and maintaining an intervention

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project, thus is viewed as a key facilitator for adapting an EBI project (Stouten et al., 2018; Weiner, 2020).

Using a psychosocial perspective, Holt and colleagues defined ORC as “the extent to which an individual or individuals are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo” (P235)(Holt et al., 2007). A growing research investigates facilitators and barriers for ORC in clinical settings at multiple ecological levels. Fuller et al. identified individual factors (e.g., perceived need for improvement, a sense of organizational mission, and opportunities for professional growth) and institutional factors (e.g., Internet access, organizational stress, and level of peer influence)(Fuller et al., 2007). A longitudinal study among 654 randomly recruited hospital staff in Canada suggested that doing active jobs (i.e., jobs with high demands and decision latitude), an active problem-solving style and self-efficacy of change independently predicted ORC (Cunningham et al., 2002). (Cunningham et al., 2002). One cross-sectional study conducted among 300 registered nurses in Jordan suggested that participants’ age was negatively associated with ORC (Mahmoud Al-Hussami, Hammad, & Alsoleihat, 2018), but other studies show that demographic background such as gender, age, and educational attainment seems not significantly related to ORC (M. Al-Hussami, Hamad, Darawad, & Maharmeh, 2017; Sharma et al., 2018).

Some recent studies in organizational change have focused on how psychosocial factors may influence individuals’ readiness for change. For example, positive psychological constructs may reduce resistance to change (Malik & Masood, 2015; Shah, Irani, & Sharif, 2017), while negative psychosocial conditions such as stress and burnout may prevent individuals embrace change or move on to the action stage. For example, medical faculty with low occupational burnout were more likely to take action on changing teaching approaches, while those with high burnout were not ready to implement change (Arvandi et al., 2016). Huang and Chen found that healthcare workers with higher levels of occupational burnout had greater need for change but perceived lower self-efficacy in change, whereas those with a stronger sense of accomplishment perceived higher efficacy to implement changes. A busy or stressful department was correlated with higher burnout and lower engagement in change (Hung & Chen, 2017).

Despite the impact of negative psychosocial conditions on ORC within healthcare organizations, there is a lack of studies among frontline healthcare providers (HCPs) in HIV clinics in low-and middle-income countries (LMICs). Occupational stress and burnout are common issues among HCPs who offer HIV prevention and care in LMICs including China, where they face excessive workload, persistent stigma and discrimination and high risks of occupational exposures. Most of studies on organizational change have been conducted in North America. Findings based on situations in developed countries may not be generalized to the resource-limited settings. In addition, majority studies that explore factors influencing ORC apply cross-sectional design (S. Qiao, Li, Zhou, Shen, & Stanton, 2018). We need more solid evidence for the causal relationship between these factors and ORC based on longitudinal data. To address these research gaps, the current study aims to examine how two prominent psychological factors (occupational stress and burnout) may impede ORC among HCPs in HIV clinics in Guangxi China.

METHOD

Study site

According to the Chinese Center for Disease Control and Prevention, by the end of 2018, there were 850,000 people living with HIV in China (XinhuaNet, 2018). One of the regions bearing the highest burden of HIV infection is Guangxi Zhuang Autonomous Region ("Guangxi") in southwest China. Since the first case of HIV infection was detected in 1996, Guangxi has witnessed a rapid expansion of HIV prevalence. From 2011 to 2017, the number of reported HIV/AIDS cases had increase by 78.7% from 69,548 to 124,282. By the end of 2017, Guangxi ranked the third among 31 provincial-level regions in terms of HIV seropositive cases (Guangxi Center of Disease Control and Prevention, 2018).

The current study was embedded in an HIV disclosure intervention trial for parents living with HIV (PLH) with seronegative children aged 6–15 years in Guangxi, China. Entitled "Interactive Communication with Openness, Passion, and Empowerment" (ICOPE), the innovative intervention in HIV care practice aimed to assist PLH in making a well-planned and developmentally appropriate disclosure of their HIV infection to their children (S Qiao et al., 2020). Baseline and follow-up data from HCPs who participated in the ICOPE trial were used in the current study.

Sampling

In 2012, six cities and ten rural counties with the largest number of reported HIV/AIDS cases in Guangxi were selected from a total of 17 cities and 75 rural counties. For all HIV/AIDS patients residing in each city/county, the HIV clinic within the designated primary public hospital is responsible for the treatment, management, and semi-annual follow-ups. All HIV clinics with at least 200 HIV/AIDS cases in the 16 cities/countries were identified, among which 40 were randomly selected to participate in the ICOPE trial.

Participants and survey procedure

Eight or nine HCPs (e.g., physicians, nurses, and case managers) were recruited from each of the participating clinics. For the total of 357 HCPs who completed the baseline survey, 5 post-intervention follow-ups were conducted in a 6-month interval from 2013 to 2016 with follow-up rate of 73% over 30 months (See Table 1). They were asked to complete a 15- to 20-minute self-administered paper-pencil survey with measures on background characteristics (e.g., demographic and work-related characteristics), occupational stress, and burnout. All participants provided written informed consent. Institutional Review Board (IRB) approval of the study protocol was obtained from Guangxi CDC in China and Wayne State University and University of South Carolina in the United States.

Measurement

Background characteristics—Baseline demographics such as age, gender, ethnicity, marital status, and educational attainment were collected. Participants also reported their work-related characteristics such as professional rank, job title, years engaged in health care, years engaged in HIV prevention and care, whether they had received HIV-related training in the past year, and frequency of HIV patient encounters during work.

ORC—The 15-item Evidence-based Practice Attitude Scale (EBPAS) was adapted and used to measure individual level ORC at each study visit (Aarons, 2005). The detailed description of adaptation of this scale was provided in another paper (S Qiao, 2018). In brief, four subscales including appeal, requirements, openness, and divergence were specified. The Appeal Subscale (4 items) assessed the respondent's intuitive appeal to adopt a change (e.g., "I feel I have enough training to use it correctly"). The Requirements Subscale (3 items) assessed the respondent's willingness to adopt a change if "it was required by an agency, supervisor, or state". The item of requirement by the state was removed based on the suggestions from the local research team as they anticipated very little variation in responses to this item (The medical practice was largely governed by the health bureaus. HCPs must comply with what the government requires). The Openness Subscale (4 items) assessed the respondent's openness to applying a change (e.g., "I am willing to use new and different types of therapy/interventions developed by researchers"). The Divergence Subscale (4 items) assessed the respondent's perception of a change as not "clinically useful" or subordinate to clinical experience (e.g., "Research–based treatments/interventions are not clinically useful"). Each item was rated on a 4-point scale ranging from 0 = "not at all", 1="to a slight extent", 2= "to a moderate extent", to 3= "to a great extent". A higher overall EBPAS score represents a higher level of ORC, which indicates more positive attitude towards the adoption of change. The Cronbach α for EBPAS ranged from 0.85 to 0.87 across the six waves.

Occupational stress—An adapted version of the Work-Related Strain Inventory (WRSI) (Revicki, May, & Whitley, 1991) was used to measure occupational stress among HCPs at each study visit. The original 18-item WRSI covered common psychological problems or behaviors associated with feelings of strain in occupational setting (e.g., "My preoccupation with work makes it hard to disengage from the job at home"). It used a 4-point response scale, ranging from 1= "does not apply to me at all" to 4 = "always applies to me". To shorten the scale, 4 items with factor loading <.50 were deleted. Five items were reversed coded before adding up all 14 items to generate the total score. A higher total score indicates a stronger feeling of occupational stress. The Cronbach α for WRSI at baseline was .77 for the current sample.

Burnout—The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) (Revicki et al., 1991) was used to assess burnout among HCPs at each study visit. Twenty-two items measuring emotional exhaustion (e.g., "Feel emotionally drained from my work"), depersonalization (e.g., "Feel I treat some patients as if they were impersonal objects"), and personal accomplishment (e.g., "Fell I'm positively influencing other people's lives through my work") were included. Each item was rated on a 7-point response scale ranging from 0=never having this feeling to 6=having the feeling a few times a week. The total score was used with a higher score suggesting a higher level of burnout. The Cronbach α for MBI-HSS at baseline was .89 for the current sample.

Data analysis

Descriptive analyses were conducted for basic background characteristics, baseline occupational stress and burnout level, and the organizational readiness at baseline and 5

wave follow-ups. Linear mixed-effects model was used to model ORC over time. ORC at baseline and five follow-up points were defined as the dependent variable. To account for correlations between repeated measures from the same participant and correlations between participants within the same clinic, a three-level model with patients nested within clinics was conducted. Although the ORC was neither a goal nor a component of the ICOPE intervention curriculum, the intervention assignment was included to minimize any potential unanticipated effects of the intervention on the ORC measures over time. Main effects of study visits and intervention assignment and their two-way interaction were modelled as fixed effects. To model the random effects, both random intercept model and random slope models were conducted, and likelihood ratio tests were used to compare the model fit.

Demographics and work-related variables selected based on the literature as well as baseline occupational stress and burnout were further added to the linear mixed effects model. Collinearity of baseline predictors was checked using VIF. To account for the potential attrition bias, baseline demographic and work-related characteristics were compared between the participants who remained and were lost in follow-ups.

RESULTS

Background characteristics

Table 2 shows the distribution of baseline characteristics among HCPs. The mean age was 35.0 years (SD=8.65). About half (45%) of participants were males and 45% were of Han ethnicity. Most (55%) HCPs had post-secondary degree, and 25% had university degree. In term of professional rank, the proportions of participants at the entry, junior, intermediate, and senior levels were 31%, 43%, 25%, and 2%, respectively. Most (77%) HCPs had no administrative title. The participants had worked in health care field for an average of 12.5 years (SD=9.07) and had engaged in HIV-related work for an average of 4 years (SD=3.90). Almost all (94%) HCPs had received HIV-related training, and 73% received such training in the past year. Around one third (37%) of participants reported that they often had contact with HIV patients, and 19% reported daily contact with HIV patients. The mean score of occupational stress and burnout was 29.7 (range: 15–48) and 35.1 (range: 0–84), respectively. No collinearity was detected for all background characteristics (mean VIF = 1.47). The main reason for missing in follow-ups was job transfer. The distributions of holding administrative titles were statistically significantly different between the HCPs who remained and were lost in follow-ups.

ORC over time

The mean score of ORC level among the participants during 6 waves of survey was stable with a range from 2.78 to 2.83. Based on the three-level mixed effects model with random intercept, no statistically significant main effect was detected for study visit ($\beta = -0.0016$, 95% CI −0.012, 0.011, p=0.978) or intervention assignment ($\beta = -0.017$, 95% CI −0.09, 0.06, p=0.659). No statistically significant interaction effect was detected between study visit and intervention assignment ($\beta = -0.0007$, 95% CI −0.017, 0.015, p=0.930).

Predictors of ORC

Potential demographic and work-related predictors of ORC were examined by linear mixed effect model (See Table 3). Minorities reported lower ORC level over time compared to Han ethnicity (β = −0.06, 95% CI −0.11, - 0.001, p=0.046). Compared to participants who had some college education, those who completed high school reported lower ORC level over time (β = −0.09, 95% CI −0.19, −0.004, p=0.041). However, no difference in ORC was found for participants who had middle school education or university education. Age, gender, and marital status were not associated with ORC.

In terms of work-related characteristics, those who hold administrative jobs reported lower levels of ORC (β = −0.06, 95% CI −0.12, −0.005, p=0.034). Occupation type (i.e., physician, nurses, or others), professional rank, years of HIV-related work, or frequency of contacting PLHIV in daily work were not associated with ORC.

Stress was highly correlated with burnout at baseline (r = 0.53), therefore we developed two final models to include stress and burnout as independent variable separately. Occupational stress significantly predicted ORC (β = −0.008, 95% CI −0.012, −0.003, p=0.002) after adjusting for baseline covariates. Similarly, burnout was also a strong predictor for ORC (β = −0.002, 95% CI −0.004, −0.0004, p=0.015). Higher levels of occupational stress and burnout at baseline predicted lower ORC over time.

DISCUSSION

Using longitudinal data, we explored the potential predictors of ORC at individual level (including psychosocial factors, demographic factors and work-related factors). The main findings suggest that negative psychosocial conditions such as occupational stress and burnout predict lower ORC over time controlling all the individual background variables. Minority HCPs reported lower ORC compared with their Han counterparts. Administration leaders reported significantly lower ORC compared with those without administration titles. HCPs with high school education attainment showed lower ORC compared to their counterparts with some college education.

Consistent with previous studies, we found occupational stress and burnout were strong indictors for lower ORC over time among HCPs in China. One recent cross-sectional survey in China reported 76.9% prevalence rate of burnout among HCPs engaging in HIV prevention and care and lower levels of psychological health compare with other HCPs (Z. Qiao et al., 2016). However, past studies among HCPs in China have not yet confirmed or highlighted the negative impacts of occupational stress and burnout on organizational change in clinical settings. Our findings suggest that occupational stress and burnout not only endanger the physical and psychosocial well-being of HCPs and decrease quality of health services but also impede their readiness for embracing innovations and adopt new programs. Occupational stress and burnout among HCPs in HIV clinics should be considered when install new interventions or practice in clinical settings.

In addition, the current study has identified a subgroup who were more likely to show lower readiness for change. They were HCPs of ethnic minority, with lower education attainment

and with administrative title. China officially recognizes 55 ethnic minority groups in addition to the Han majority (The State Council of the People's Republic of China, 2014). As of 2010, the combined population of these ethnic minority groups comprised 8.49% of the population of mainland China (XinhuaNet, 2011). Guangxi is the Zhuang (one of 55 ethnic minorities) Autonomous Region with Zhang people making up 32% of its total population (Guangxi Bureau of Statistics, 2018). In our study, HCPs of ethnic minority accounted 34% of the total participants. The results of additional analysis suggested that ethnicity was not significantly associated with occupational stress or work-related support. More studies are needed to explore the reasons and mechanisms of the difference of ORC by ethnicity among HCPs in Guangxi. For example, stigma and perceived institutional support could be potential contextual factors that influence ORC of ethnic minority HCPs in HIV clinics.

The associations between ORC and demographic characteristics of HCPs were mixed (Arnéguy, Ohana, & Stinglhamber, 2018; Saleh, Khodor, Alameddine, & Baroud, 2016; Samaranayake & Takemura, 2017). We found that HCPs with lower education were more likely to report lower ORC over time. This association became marginally significant in final mixed effect models. Since the number of these subgroup was relatively low in our study (n= 36), we need further studies to explore the relationship between ORC and education level among HCPs working in HIV prevention and care in China.

It is also notable that HCPs with administrative responsibilities reported lower ORC. Existing studies suggest that transformational leaders can enhance readiness for change (Mahmoud Al-Hussami et al., 2018). They can facilitate positive change by inspiring and motivating HCPs to exert extra efforts for organizational change (Mahmoud Al-Hussami et al., 2018; Andrews, Richard, Robinson, Celano, & Hallaron, 2012). In China, HCPs holding administrative titles are usually middle-level leaders in HIV clinics. Ideally, they could play a positive role in advocating for organizational change and introducing innovations into their clinics. However, we found they showed lower ORC. One explanation is having administrative titles means more stress or extensive working load which may impede their positive attitudes towards organizational change. Further investigations are needed to figure out the reasons behind this finding.

The current study is subjective to several limitations. First, we just focused on the individual level factors and did not include organizational level factors such as size of the health facilities, job retention, and organizational support for change. A lack of contextual information may limit our ability to comprehensively understand and interpret the findings. Second, we used longitudinal data collected from an RCT intervention project. Although this intervention did not aim to improve ORC level among HCPs and we did not detect any significant difference between intervention and control group in ORC, we were not able to exclude any potential influence of the intervention because of the study design. Third, we did not include the positive psychosocial factors (e.g., resilience, positive coping) in the analysis. Therefore, we cannot confirm if positive psychosocial factors could buffer the negative impacts of occupational stress and burnout on readiness for change. Fourth, we did not analyze the longitudinal data on occupational stress and burnout among HCPs given the current study focused on identifying baseline predictor of ORC level. Further studies

are needed to examine the trajectories of psychosocial factors and their influence on ORC levels so we can explore the dynamics between psychosocial conditions and the ORC among HCPs over time. Last, a high proportion of the participant HCPs were recruited from clinics located in rural areas in Guangxi. The results may not be generalized to developed regions in China.

Despite these limitations, our study confirms the relationship between ORC and negative psychosocial factors among HCPs using longitudinal data and informs potential strategies in reducing change resistance in China. To promote the ORC among HCPs, we call for structural-level interventions to address occupational stress and burnout by improving their work environment and individual-level interventions to enhance their psychosocial wellbeing through promoting their positive psychological strengths (e.g., resiliency, hope, optimism, and self-efficacy)(Lizar, Mangundjaya, & Rachmawan, 2015). We also need to motivate middle-level leaders to engage in organizational change and pay more attention to the subgroups of minority and with lower education attainment.

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Table 1

Summary of sample size, follow-up rate, and ORC mean score by survey wave

Survey waves	Total (follow-up rate)	ORC level, Mean (SD)
W1(Baseline)	357(100%)	2.79(0.36)
W2(6 month)	291(81.5%)	2.83(0.34)
W3(12 month)	274(76.8%)	2.81(0.32)
W4(18 month)	260(72.8%)	2.78(0.33)
W5(24 month)	261(73.1%)	2.81(0.33)
W6(30 month)	262(73.4%)	2.80(0.31)

Table 2

Background characteristics of HCPs (Baseline)

N(%)	Total (n=357)
Demographic variables	
Gender	
Male	161(45.1%)
Female	196(54.9%)
Age (Mean, SD)	34.9±8.6
Ethnicity	
Han	222(65.9%)
Non-Han	115(34.1%)
Marriage status	
Married	263(78.0%)
Non-married	74(22.0%)
Education	
Junior middle school	30(8.9%)
Senior middle school	36(10.7%)
College	185(55.1%)
University	85(25.3%)
Work-related variables	
Occupation	
Physician	184(55.6%)
Nurse	62(18.7%)
Others	85(25.7%)
Professional rank	
Entry level	109(30.6%)
Junior	154(43.3%)
Intermediate	88(24.7%)
Vice senior	5(1.4%)
Administrative title	
None	246(70.9%)
Department leader	69(19.9%)
Clinic leader	6(1.7%)
Others	26(7.5%)
Received HIV-related training before	
Yes	335(93.8%)
Received HIV-related training last year	
Yes	260(73.4%)
Frequency of encountering HIV patients	
None	25(7.0%)
Sometimes	129(36.2%)
Often	133(37.4%)

N(%)	Total (n=357)
Everyday	69(19.4%)
Years of working in health care area (Mean, SD)	12.5±9.1
Years of working in HIV-related area (Mean, SD)	4.1±3.9

Table 3.

Results of mixed-effect model on ORC (with baseline demographic and work-related variables as predictors)

N(%)	β (95% CI)	p-value
Fixed effects		
Intervention	-0.014(−0.07, 0.04)	0.634
Demographic variables		
Gender		
Female	0.01 (−0.05, 0.07)	0.690
Male(ref)		
Age, 10 years #	-0.006(−0.05, 0.04)	0.800
Ethnicity		
Minority	-0.06(−0.11, −0.001) *	0.046
Han(ref)		
Marriage status		
Non-married	-0.01(−0.09, 0.06)	0.741
Divorced/separated	0.03(−0.08, 0.13)	0.627
Married(ref)		
Education		
Middle school	-0.04(−0.13, 0.06)	0.464
High school	-0.09(−0.19, −0.004) *	0.041
University or higher	0.04(−0.02, 0.11)	0.173
College(ref)		
Work-related variables		
Occupation		
Nurse	-0.009(−0.09, 0.07)	0.836
Others	-0.03(−0.10, 0.03)	0.307
Physician(ref)		
Administrative title		
Yes	-0.06(−0.12, −0.005) *	0.034
No(ref)		
Professional rank		
Junior	-0.02(−0.08, 0.05)	0.652
Intermediate or higher	0.03(−0.06, 0.12)	0.558
Entry level(ref)		
Frequency of encountering HIV patients		
None	-0.09(−0.02, 0.21)	0.104
Often	0.03(−0.03, 0.08)	0.426
Everyday	-0.003(−0.07, 0.07)	0.924
Sometimes(ref)		
Years in HIV-related area, 10 years #	0.01 (−0.07, 0.09)	0.759
Random effects, mean(se)		

N(%)	β (95% CI)	p-value
Within-cluster	0.002(0.002)	
Within-subject	0.026(0.004)	

[#]10-year difference was detected given the extremely small coefficients assessing 1-year difference.

[*]p<0.0