Validation of the Copenhagen Burnout Inventory in Pharmacists

Olajide O. Fadare, BPharm[1]; Michael Andreski, PhD[2]; Matthew J. Witry, PharmD, PhD[1]
[1]University of Iowa, Iowa City, Iowa; [2]Drake University, Des Moines, Iowa

Abstract
Objectives: This study aimed to 1) determine the validity of the Copenhagen Burnout Inventory (CBI) for use in the assessment of burnout in a sample of pharmacists using confirmatory factor analysis (CFA), and 2) use the CBI items and other measures of work-life to assess burnout in pharmacists employed in various types of practice.
Methods: A cross-sectional survey was administered to a sample of 2,582 pharmacists in a single Midwestern US state. The survey included the three subscales of the CBI, each of which measures personal, work-related, and patient-related dimensions of burnout. Other items included demographics, practice type, workload, and work-life balance. CFA was used to measure fit, and Cronbach's alpha was used to assess reliability. Correlation was used to assess criterion validity of the CBI. Logistic regression and bivariate analyses were used to assess pharmacist burnout based on demographics.
Results: Following the removal of 2 items from the measurement model, a 17-item 3-factor CBI was found to possess satisfactory psychometric properties for use in pharmacists. The CBI correlated with measures of work-life demonstrating criterion validity. A logistic regression showed that younger pharmacists and community pharmacists experience higher burnout than older pharmacists and clinical pharmacists. Community pharmacists also more often reported high workloads and poorer work-life integration. Both community and clinic pharmacists desired more time providing patient care services and less time dispensing.
Conclusion: The CBI is a psychometrically reliable and valid instrument for assessing burnout in pharmacists. Younger pharmacists and community pharmacists warrant attention due to their higher degree of burnout.

Keywords: Burnout, pharmacy, workload, work-life, measurement, survey

Introduction

The World Health Organization included burnout in the 11th Revision of the International Classification of Diseases (ICD-11), conceptualizing it as an occupational phenomenon resulting from chronic workplace stress that has not been successfully managed. Burnout can be characterized using three dimensions 1) feelings of energy depletion or exhaustion, 2) increased mental distance or cynicism from one's job, and 3) reduced professional efficacy.[1] Research suggests burnout is more prevalent in healthcare professionals relative to the general population.[2] Factors contributing to burnout in healthcare include compounding emotional aspects of patient care, increased clerical and administrative tasks, reduced reimbursement, and fast-paced changes to practice.[3] Burnout is associated with increased risk of medical errors, patients nonadherence to treatments, lower patient satisfaction, and also poses a threat to patient safety.[4,5]

The incidence and prevalence of burnout among physicians are well documented.[3] Less research has investigated burnout in other professionals on the health care team.[3,6] There are growing concerns about the negative impact of burnout on the professional well-being of pharmacists and the potential for similar effects on patient safety and outcomes.[7] Some of these effects like decreased pharmacists' job satisfaction,[8] reduced work engagement,[9] and increased intention-to-leave and job turnover[10,11] are related to the pharmacist's professional role, while other effects like increased risk of coronary heart disease due to exhaustion and fatigue,[12] and sleep disturbances,[13] affect the pharmacist in a more personal way. These concerns inform the need for meaningful assessments of burnout in pharmacists to guide the evaluation of interventions aimed at reducing burnout and improving pharmacist wellbeing.

Several instruments have been developed to measure burnout[14], the most common is the Maslach Burnout Inventory (MBI).[15,16] The MBI conceptualizes burnout as a composite of emotional exhaustion, depersonalization, and personal accomplishment and has been validated among physicians and nurses.[17,18] Critics have pointed out that though the MBI supposes to measure burnout as one construct, rather, it represents three different constructs that should not be combined but measured and analyzed as distinct phenomena. This lack of fine correspondence between concept and measure could result in biased estimates of burnout.[19,20] Another major limitation of the MBI is the proprietary nature which can contribute to a lack of transparency when reported.[14,20]

The Copenhagen Burnout Inventory (CBI) was designed to address some of the limitations of the MBI.[20] The CBI is premised on two major theoretical considerations; the first being the conceptualization of burnout as fatigue or exhaustion, and the second being the theory of causal attribution. Schaufeli et al. (2001) and Pines et al. (1988) both define burnout as a state of physical, emotional, and mental

Corresponding author: Matthew J. Witry, PharmD, PhD
University of Iowa, Iowa City, Iowa State, US
Email: matthew-witry@uiowa.edu

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exhaustion that results from long-term involvement in situations that are emotionally demanding.[21,22] The theory of causal attribution posits that individuals engage in attributional analyses as they seek to understand, predict, and control events they are experiencing in their lives.[23] Combining the experience of fatigue or exhaustion in workers with attribution, the CBI features three subscales intended to measure burnout based on three dimensions, that is, levels of causal attributions. One of the subscales labeled personal burnout (PB), is designed to be generic and applicable regardless of occupation. The other two subscales are labeled work-related burnout (WRB) which focuses on the individual's attribution of fatigue or exhaustion to their work, and client-related burnout which measures the degree of fatigue or exhaustion an individual attributes to their working directly with clients. In this study, we define clients as patients that pharmacists interact with in the course of their work and labelled this subscale as patient-related burnout (PRB).

Although the authors of the CBI reported high internal reliability, face validity, and criterion validity for the items, the authors did not originally validate the three scales of the CBI using factor analysis based on the rationale that having three scales on the inventory was not a statistical decision, but rather, a theoretical decision.[20] In a study on burnout among Australian dentists in which the CBI was compared with the MBI, Winwood et al. concluded that "the CBI possesses excellent psychometric properties [reliability] and seems to be an appropriate measure of burnout in populations of health professionals."[24] The construct validity of the CBI and its suitability for assessing burnout in pharmacists is yet to be determined.

Objective

The objectives of this study were to 1) validate the CBI 3-factor conceptualization of burnout for a sample of pharmacists using confirmatory factor analysis (CFA). 2) To use these factors to assess burnout in pharmacists employed in various types of practice.

Methods

Data collection

This study was a cross-sectional survey of Iowa Pharmacists performed in 2019. A sample of 2,582 pharmacists were recruited for the study using a mixture of mailed and electronic self-administered surveys. The protocol was designed using elements of the Total Design Method.[25] Duplicate sets of name and address mailing labels (n=3,645) of all registered pharmacists who had an Iowa mailing address were obtained from the Iowa Board of Pharmacy. These names were compared to a list of e-mail addresses obtained from the Iowa Pharmacy Association (IPA) membership database (n=2,132). Pharmacists with emails were sent an invitation to complete the survey via web link. For the 1,513 pharmacists that only had an address, 450 were randomly selected to be sent a paper survey via postal mail due to budgetary constraints. Two weeks after the initial e-mailing and postal mailing, a reminder e-mail was sent to the e-mailed pharmacists and a reminder postcard was sent to the pharmacists who received a mailed survey. Instances where an e-mail was returned as being sent to an invalid address or when a postal mailing was returned were recorded and removed from the effective sample size. The final sample size was 2,589.

The e-mails included information about the research and its voluntary nature and described the confidentiality protections for participants. The mailed surveys contained a cover letter with the same information as the e-mails and a paper copy of the survey. There was no tracking of participation for either the e-mailed or postal mailed surveys. Completion of any items in the survey was considered as a response for statistical purposes. IRB exemption was granted for this study by Drake University, Des Moines, Iowa, US.

Measures

The CBI is a 19-item measure that assesses three dimensions of burnout- personal burnout (PB), work-related burnout (WRB), and patient-related burnout (PRB). Personal burnout is conceptualized as burnout experienced by pharmacists regardless of job roles. Work-related burnout refers to burnout attributed by pharmacists to aspects of their work other than providing services directly to other humans (patients). Patient-related burnout refers to burnout attributed by pharmacists to providing services directly to other humans (patients).[20] The personal burnout scale includes six items such as "How often do you feel worn out?" which are scored on a five-point Likert-scale of 1 (always) to 5 (never). The work-related burnout scale has seven items, for example, "Do you feel burnout because of your work?" scored on a five-point Likert scale of 1 (always) to 5 (never). The patient-related burnout scale includes six items such as "Does it drain your energy to work with patients?" also scored on a five-point Likert scale of 1 (always) to 5 (never).

The workforce survey also included pharmacist demographics (age, gender, ethnicity, educational experiences completed, and current licensing status), practice-type, as well as other indicators of burnout like current workload, work-life integration, and role conflict. Due to the low sample representation on most practice-types on the survey, practice-types were grouped into two major categories of community pharmacists and clinical pharmacists for these analyses. Community pharmacists comprise the following: independent, small chain and large chain community pharmacies, mass merchandisers, and supermarket pharmacies. Clinical pharmacists comprise the following: clinic-based pharmacy, mail-service pharmacy, government and non-government hospital or health system, nursing homes, and home health. Pharmacy Benefit Associations (PBA), academic pharmacists, for-profit, and non-profit organizations were categorized as others.

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Analysis

Descriptive statistics for the respondents and the CBI items were computed. Cronbach's alpha and inter-item correlation were used to assess the reliability of the three subscales of the CBI. We confirmed the fit of the 3-factor structure of the CBI in our sample by conducting confirmatory factor analysis (CFA). Missing data analysis was conducted and both univariate and multivariate outliers were assessed for exclusion from the CFA by examining standardized residuals, Cook's distance, and Mahalanobis distance as described by Bowen and Guo (2012).[26] Both absolute and relative fit indices were used in model evaluation. These include model chi-square (χ^2), root mean square error of approximation (RMSEA), standardized root mean-square residual (SRMR), Tucker-Lewis index (TLI), and comparative fit index (CFI). SRMR cut point for model acceptance was 0.05. Perry et al. (2015) have suggested that conventional cut-off points of > 0.95 for TLI and CFI, and RSMEA < 0.06 may be too conservative in estimating the goodness of fit when a multifactorial instrument is evaluated in a diverse sample.[27] Hence, we have adopted cut-off points of >0.90 for TLI and CFI, and RMSEA < 0.08 as acceptable levels of fit for the CFA models in this study.

In an exploratory post-hoc analysis, the model with an admissible solution was respecified to further improve the fit. Re-specification was guided by considerations of the theoretical underpinnings of the CBI, and inspection of modification indices, expected parameter change values, and standardized residuals to assure substantive justification. Also, within the CFA framework, a multigroup analysis was used to determine whether the CBI can be used to make inferences about burnout in a population of pharmacists independent of practice type.

The second study objective was addressed by conducting binomial logistic regression in which burnout was regressed on practice-type as the main explanatory variable with age and gender as covariates in the model. As part of the larger survey, the CBI measured burnout using 19 items on a 5-point scale with responses coded 1 for *always*, 2 for *often*, 3 for *sometimes*, 4 for *seldom*, and 5 for *never*. For the logistic regression, the dependent variable, burnout, was dichotomized into high burnout for respondents with median burnout score <= 3, and low burnout for respondents with median burnout scores > 3. Likewise, based on the scoring of the scale, lower mean scores indicate higher average burnout, and higher mean scores indicate lower average burnout. Other indicators of burnout included workload, work-life integration, and role conflict (measured as the difference between the desired time and the actual time spent on tasks at work) were compared across practice types using a series of bivariate analyses.

Criterion validity of the CBI items was assessed by testing correlations between the CBI and other factors associated with burnout; workload and work-life integration. A negative correlation was hypothesized between desirable work-life integration and high burnout, and a positive correlation was hypothesized between high workload and high burnout. Completion of any items in the survey was considered as a response, however, cases with missing data were excluded from certain analyses for statistical purposes. Analyses were performed in R v.4.0.0 at an *a priori* significance level of 0.05.

Results

Descriptive statistics

The survey had a valid response rate of 21.7% (561/2,589). The mean age for the study sample was 47 years (SD = 13.0) and ranged from 25 to 83 years. 41.4% were women. The mean number of years of practice for respondents was 22.1 years (SD = 13.5) and ranged from 1 to 57 years. 26.0% of the total respondents worked as community pharmacists at the time of the study (Table 1).

Descriptive statistics for the CBI items and subscales are reported in Appendix A. The descriptive statistics for the CBI items showed no substantial violation of the condition of normality required for CFA (Appendix A). Skewness and kurtosis were within acceptable levels based on a cut-off of > |1|.[28] Standardized residuals (SRESID > ±1.96), Cook's distance (Cook's D > 1), and Mahalanobis distance (D^2_M, $p < 0.001$) computed for the sample data identified 1 univariate outlier and 40 multivariate outliers that were excluded from the CFA analyses (N = 520). Each of the three subscales showed high internal reliability using Cronbach's alpha ($\alpha_{PB} = 0.93$, $\alpha_{WRB} = 0.81$, and $\alpha_{PRB} = 0.89$).

Confirmatory Factor Analysis (CFA)

Using the sample after removing outliers (n= 520), CFA was performed on the hypothesized covariance structure between the 19 CBI items. In all the analyses, inter-factor correlations were allowed, each item (indicator variable) loaded on only one factor, latent factors were scaled by using one of the indicator variables as a reference indicator. The first model, Model 1 (Appendix B) was found to have an inadmissible solution on account of the presence of factor loading greater than 1.0 and a negative variance estimate for items PRB05 and PRB06.[29] The model was re-specified to give model 2 by excluding these 2 items. Although model 2 (Appendix B) was found to have an admissible solution with a slightly better fit than model 1, an unacceptable RMSEA level informed inspection of the model for localized areas of poor fit. Large values of modification indices, expected parameter change values, and standardized residuals revealed the possible omission of salient indicator-error correlations between some items. The model was respecified to include indicator-error correlations that were deemed to make satisfactory substantive sense. Substantive justification for re-specification was based on the presence of effects that stem from the use of a multifactorial-multiple indicator questionnaire like the CBI as the assessment tool, and the similar wording of some of the questionnaire items.[30] The re-specified model, that is model 3 (Appendix B), was found to have an adequate fit. Model 3 was retained as the final solution

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and used in subsequent analyses. All factor loadings were significant and had values above 0.40 (range = 0.58 to 0.97). Path WRB04 with the lowest factor loading was also the only reversed-scored item in the CBI (Appendix C).

Multi-group analysis conducted between community pharmacists (n = 132), clinic-oriented pharmacists (n = 142), and pharmacists in other practice types (n = 68) showed that constraints of an equal number of factors, equal factor-indicator pattern, and equal factor loadings did not significantly degrade the fit of the model [χ^2_{diff} = 121.86, df_{diff} = 28, p = 1.0], suggesting that the measurement of burnout by the CBI was invariant equal across groups. Fit indices for CFA models are presented in Appendix C.

Statistically significant positive correlation in the hypothesized direction was found between workload and CBI items [$r_{PB/WLD}$ = 0.43, $r_{WRB/WLD}$ = 0.472, $r_{PRB/WLD}$ = 0.20 (p < 0.001)], and statistically significant negative correlation in the hypothesized direction was found between work-life integration and CBI items [$r_{PB/WLI}$ = -0.55, $r_{WRB/WLI}$ = -0.57, $r_{PRB/WLI}$ = -0.34 (p < 0.001)], providing evidence of criterion validity for the CBI.

Logistic Regression

In the binomial logistic regression model (Table 2), age was a significant predictor of high burnout in pharmacists (p = 0.0303). In terms of practice-type, relative to the community practice-type as the reference group, clinical practice-type was the only significant predictor of high burnout (p < 0.001). As shown in table 5, the odds of pharmacists in clinical practice-type experiencing high burnout is 0.39 (0.23, 0.65) times the odds of community pharmacists experiencing high burnout. Gender was not a significant predictor of high burnout in this sample of pharmacists. Overall, on average, burnout for community pharmacists was significantly higher than for clinical pharmacists on each of the subscales (p < 0.001), and average burnout for pharmacists decreased from younger to older age groups.

Bivariate Analyses

As shown in Table 3, tests of difference in proportions showed that a significantly higher proportion of community pharmacists than clinical pharmacists reported their current workload to be high (p = 0.004) and had negative work-life integration (p = 0.015). Also, while on average, both community pharmacists and clinical pharmacists reported spending more time than they desired on medication dispensing, patient care services, and administrative tasks, and less time than they desired training and mentoring, Wilcoxon rank-sum test showed that conflict in roles was more significant for community pharmacists than for clinical pharmacists.

Discussion

The CBI is designed to measure burnout across three dimensions- personal life experiences (PRB subscale), work-related burnout (WRB subscale), and interaction with patients at work (PRB).[20] Our assessment of criterion validity show that the CBI measures the construct burnout, and our validation process confirmed this hypothesized three-factor structure for burnout to function adequately in pharmacists and derived a more parsimonious instrument by removing 2 patient-related burnout (PRB) items from the CBI that did not fit the data adequately. Also, findings from our analysis comparing practice types show equality of factor loadings which indicates that the CBI is suitable for use in measuring burnout among pharmacists across different practice- settings. Also, the high internal reliability, significant factor loadings for each subscale, and consistency of the CBI's factor structure across different practice settings support the CBI authors' position that at any time, any of the subscales can be used to assess burnout independent of other subscales. This is especially important for heterogeneous populations like pharmacists where burnout may be experienced differently by different groups such that the focus for some practice settings might be work-related burnout rather than patient-related burnout or vice-versa. Though this is the first study to examine the suitability of the CBI for use in pharmacists, our findings are consistent with Winwood et al.'s (2004) study that provided evidence for the use of CBI in its entirety among Australian dentists.[24] Therefore, we propose the CBI as a valid measure for pharmacy researchers to assess burnout in pharmacists.[20]

Using a reduced 17-item CBI to assess burnout in a population of US pharmacists, the risk of high burnout appeared to decrease with increasing age, with pharmacists younger than 30 years having the highest risk of high burnout suggesting that age is a protective factor against burnout. This trend is consistent with the findings of other studies showing that older workers are better at using positive adaptive and emotion regulation skills acquired through life experiences which makes them more engaged on the job and less burnt out when faced with stressful situations.[31-34] With older pharmacists, previous encounters with stressful situations serve to boost their feelings of confidence and increases their ability to anticipate and prepare in advance for potentially difficult situations compared to younger, less experienced pharmacists.[34,35]

Also, pharmacists in clinical practice were less likely to report high burnout on the CBI compared to pharmacists in community practice as community pharmacists reported experiencing significantly higher levels of work-place stressors like excessive workload, negative work-life balance, and role conflicts compared to clinical-practice pharmacists. This disparity between community pharmacists and clinic pharmacists could be due to increasing prescription volume combined with declining reimbursement rates which puts increased demand on community pharmacists to fill more prescriptions and provide more administrative and billing services related to prescription management.[36-39] Also, although there has been an increase in pharmacy services like immunizations and medication reviews, community pharmacists still spend significantly more of their time on

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routine medication dispensing than on activities like providing patient care services.[40] This dissonance between tasks that pharmacists find the most meaningful and the reality of their daily work tasks contributes to a sense of dissatisfaction as pharmacists feel that their skills are being underused.[40,41] Further, pharmacists may experience moral injury when they consistently fail to meet the needs of their patients.[42] Hence, efforts to reduce and prevent burnout in pharmacists can be directed at aligning job roles with pharmacists' perception of meaning. For example, shifting the focus of dispensing to a practice of continuous medication monitoring may increase pharmacist engagement in their work.[43]

Burnout, left unaddressed, has detrimental personal and organizational consequences for pharmacists and pharmacy practice.[19] For instance, burnout has been identified as a key determining factor of high pharmacist turnover and intent to leave or change jobs.[44] High pharmacist turnover is associated with suboptimal quality of care for patients,[45] and also diminishes the returns on pharmacists' professional training by constantly seeking job opportunities outside their current place of employment due to a sense of dissatisfaction and disengagement from their work.[45-48] As is the case with physicians and health care professionals who share similar training and professional obligations with pharmacists, personal or psychological burnout due to consistent exposure to patient-suffering which draws empathy from the pharmacist and leaves them with emotional injuries,[49] has been associated with increased risk of mental health challenges like depression and suicidal ideation among pharmacists.[50-52] The problem of burnout-induced suicidal ideation in pharmacists is further complicated by the reluctance of pharmacists to become patients themselves which makes them less likely to voluntarily disclose their challenges for timely intervention.[53]

Limitations

Data for this study was collected from a survey of pharmacists in a single midwestern state in the US. This reduces the generalizability of the findings to other populations of pharmacists that may differ from our study population in ways that are uniquely relevant to their experience of burnout. Also, the response rate for the study survey was somewhat low (21.67%) which could suggest the potential for non-response bias if those completing the survey had different characteristics and experiences than those that did not complete the survey. Because of the small sample and a significant proportion of respondents skipping the demographic questions, individual practice-types could not be used as a unit of analysis which limited our ability to explore burnout at specific levels of practice-type.

Future Research

Further studies are needed to explore how pharmacists might differ in their experience of burnout based on specific causal attributions as represented by each of the subscales of the CBI, using a more diverse pharmacy population and considering the impact of the COVID-19 pandemic on pharmacists' well-being. Also, future research would include modeling the effect of interactions between the three dimensions of the CBI on burnout and examining potential reverse causal pathways between pharmacists' experience of burnout and relevant personal and work factors. Also, more research is needed to explore the relationship between other aspects of pharmacists' work experience and burnout, such as perceived control, social support from peers, colleagues, and supervisors, moral distress, work-place discrimination, and harassment. Reporting overall averages and trends, however, is likely to miss the nuances and lived experiences of individual pharmacists which also would provide meaningful insight into the phenomena of pharmacist work-life and burnout. There are important differences between how researchers study burnout and work-life, and how employers should monitor the wellness and engagement of their staff which warrant more exploration, including a greater focus on fulfillment and wellness.[54] More work is needed on professional wellness and work engagement, including using qualitative methods.

Conclusion

This study provides evidence for the validity and reliability of the CBI as an instrument for assessing burnout in community pharmacists and clinical-practice pharmacists. Focus should be placed on community pharmacists and younger pharmacists due to their significantly higher levels of burnout. More nuanced investigations of work-life are needed, as are evidence-based Interventions.

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Table 1: Description of participants (N= 561)

Characteristic	N (%)	*Mean (SD)
Gender		
Male	112 (20.0)	3.38 (0.69)
Female	232 (41.4)	3.10 (0.71)
Missing	217 (38.6)	-
Age (years)		
≤ 30 years	44 (7.8)	3.07 (0.72)
31 – 40 years	84 (15.0)	3.13 (0.74)
41 – 50 years	78 (13.9)	3.20 (0.77)
51 – 60 years	65 (11.6)	3.24 (0.75)
> 60 years	68 (12.1)	3.55 (0.81)
Missing	222 (39.6)	-
Practice Type		
Community Pharmacy	146 (26.0)	2.95 (0.74)
Independent	*n=44*	
Small Chain	*n=7*	
Large Chain	*n=47*	
Mass Merchandiser	*n=20*	
Supermarket pharmacy	*n=28*	
Clinical practice	158 (28.2)	3.30 (0.74)
Clinic-based pharmacy	*n=11*	
Mail Service pharmacy	*n=2*	
Government Hospital	*n=28*	
Non-government Hospital	*n=16*	
Nursing home	*n=84*	
Home health	*n=17*	
Others	48 (8.6)	3.52 (0.72)
[1]PBMs	*n=8*	
Academia	*n=4*	
For-Profit Organization	*n=3*	
Non-Profit Organization	*n=33*	
Missing	209(37.3)	-

*average burnout; lower values indicate higher burnout

[1]PBM = Pharmacist Benefit Managers, n = subgroup sample size

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Table 2: Logistic Regression predicting high burnout=1 versus low burnout=0

		95% CI for Odds Ratio		
Predictor	**Beta (SE)**	**Lower bound**	**Odds Ratio**	**Upper bound**
Intercept	1.39 (0.37)	1.97	4.03	8.51
Age	-0.23 (0.11)*	0.64	0.79	0.98
Practice Type: Community (Reference)				
Clinical	-0.95(0.26)**	0.23	0.39	0.64
Other	0.18 (0.22)	0.78	1.19	1.83
Gender: Man (Reference)				
Woman	0.19 (0.20)	0.80	1.20	1.79

** $p < 0.001$,
* $p = 0.009$

Table 3: Bivariate analysis of burnout across practice-types

Difference in proportions

Indicator	**$p_{community}$**	**$p_{clinical}$**	**Diff. in p**	**95% CI**	***p*-value**
High current workload	0.65	0.48	0.17	0.053, 0.286	0.004
Negative work-life integration	0.41	0.27	0.14	0.033, 0.257	0.015

Role Conflict

	Community		**Clinical**		
Work Activities	**Mean (SD) actual time spent**	**Mean (SD) desired time**	**Mean (SD) actual time spent**	**Mean (SD) desired time**	**p value***
Medication dispensing	70.62 (23.11)	53.94 (22.73)	37.74 (29.73)	26.84 (25.49)	<0.001
Provision of patient care services	14.05 (11.00)	29.78 (30.00)	25.13 (30.00)	45.75 (28.08)	<0.001
Business Organization/Management	8.80 (16.84)	7.64 (14.63)	15.41 (26.60)	13.17 (25.18)	0.03
Training and Mentoring	3.50 (5.16)	6.36 (7.60)	5.08 (6.00)	8.36 (11.34)	0.24

p = proportion
* test of significant difference in role conflict between community pharmacists and clinical pharmacists

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Appendix A: Exploratory descriptive statistics of the 19 CBI items

item	Mean	SD	Median	Skew	Kurtosis	IIC
PB01	2.372	0.93	2	0.676	0.515	0.55
PB02	2.791	1.06	3	0.17	-0.623	0.55
PB03	2.729	1.07	3	0.269	-0.479	0.59
PB04	3.505	1.14	4	-0.4	-0.644	0.61
PB05	2.791	1.06	3	0.202	-0.407	0.62
PB06	3.751	1.04	4	-0.721	-0.005	0.51
WRB01	2.477	1.09	2	0.287	-0.597	0.59
WRB02	3.314	1.17	3	-0.301	-0.713	0.60
WRB03	3.899	1.13	4	-0.752	-0.39	0.57
WRB04	2.386	0.94	2	0.499	0.073	0.41
WRB05	2.866	1.06	3	0.046	-0.496	0.58
WRB06	2.852	1.00	3	-0.069	-0.479	0.57
WRB07	3.119	1.16	3	-0.051	-0.735	0.63
PRB01	3.726	0.92	4	-0.16	-0.747	0.44
PRB02	3.668	0.95	4	-0.32	-0.149	0.46
PRB03	3.643	0.85	4	-0.025	-0.52	0.45
PRB04	3.217	1.13	3	-0.118	-0.729	0.34
PRB05	3.144	0.78	3	0.071	-0.235	0.68
PRB06	3.444	0.80	3	-0.157	0.103	0.62

PB= personal Burnout, WRB= Work-Related Burnout, PRB= Patient-Related Burnout
IIC = Inter-Item Correlation

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Appendix B: Summary of goodness-of-fit indices for different measurement models

Model	χ^2	df	p	CFI	TLI	SRMR	RMSEA	RMSEA CI	Comment
Model 1	3223.89	149	<0.001	0.985	0.985	0.099	0.199	[0.193, 0.205]	Inadmissible solution
Model 2	743.72	116	<0.001	0.996	0.996	0.051	0.102	[0.095, 0.109]	Admissible solution with poor fit
Model 3 with indicator-error correlations	527.73	111	<0.001	0.998	0.997	0.045	0.085	[0.079, 0.092]	Retained solution; model with a satisfactory fit

Appendix C: Standardized factor loadings for the final model (Model 3)

Item	λ	95% CI
PB01	0.839	[0.815, 0.863]
PB02	0.876	[0.855, 0.897]
PB03	0.918	[0.903, 0.933]
PB04	0.907	[0.889, 0.923]
PB05	0.953	[0.942, 0.965]
PB06	0.744	[0.707, 0.781]
WRB01	0.908	[0.891, 0.925]
WRB02	0.835	[0.811, 0.859]
WRB03	0.817	[0.787, 0.846]
WRB04_rev	0.589	[0.641, 0.536]
WRB05	0.886	[0.866, 0.905]
WRB06	0.835	[0.808, 0.861]
WRB07	0.972	[0.962, 0.981]
PRB01	0.963	[0.943, 0.983]
PRB02	0.970	[0.951, 0.988]
PRB03	0.957	[0.938, 0.976]
PRB04	0.633	[0.568, 0.698]

[λ] factor loadings

$p < 0.001$ for all factor loadings