Community Health Nursing Competency and Psychological and Organizational Empowerment of Public Health Nurses in Taiwan: A Cross-Sectional Survey

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Research article

Keywords: public health nurse, nursing competence, community empowerment

Posted Date: August 25th, 2020

DOI: https://doi.org/10.21203/rs.3.rs-45292/v1

Version of Record: A version of this preprint was published at Healthcare on August 4th, 2021. See the published version at https://doi.org/10.3390/healthcare9080993.

Abstract

Background: This study explored the effect of public health nurses' current community care nursing competency on the psychological and organizational empowerment of public health services in Taiwan.

Method: A cross-sectional survey design and a self-developed structured questionnaire were administered to Taiwanese public health nurses, recruited using a purposive sampling technique, who participated in community health care workshops offered by Ministry of Health and Welfare in 2019.

Results: The majority of subjects were aged between 40 and 49 years and reported working in public health for over 10 years. Furthermore, 89.30% of the subjects worked in a Public Health Center. The mean score of Community Care Nursing Competence (CCNC) was 3.92 ± 0.83 (measured using a five-point Likert scale). The mean score in Community Empowerment (CE) was 3.66 ± 0.90, between "Neutral" and "Agree." The CCNC was positively correlated with the workplace. The CE was positively correlated with age. The CCNC was positively correlated with psychological and organizational empowerment. The stepwise regression revealed that age (B = 0.18, p = .021) and communication competence (B = 0.17, p = .002) positively predicted community empowerment.

Conclusions: The study revealed that age and communication competence were crucial factors in public health nurses working in the community. With age and through the accumulation of practical experience, Taiwanese public health nurses' communication competence may also improve, which can further enhance their psychological and organizational empowerment in the nursing workplace.

Background

Promoting community care has been adopted as a policy goal because of the aging population and advancements in medical technology. Community care emphasizes the need to integrate health concepts and healthy lifestyles to achieve a high quality of life, which includes independence, social participation, and dignity (Cole et al., 2011). The outbreak of new infectious diseases (such as COVID-19), complications caused by chronic diseases, and decreasing medical budgets have affected global public health (MacDonald & Schoenfeld, 2003).

In Canada, a set of core competencies for public health was devised, comprising seven categories: public health sciences; assessment and analysis; policy and program planning; implementation and evaluation; pPartnerships, collaboration, and advocacy; diversity and inclusiveness; and communication and leadership (Weir et al., 2010).

Public health care nurses no longer serve as an auxiliary in traditional community health care or medical care. Instead, nurses should form partnerships with residents, fully cooperate with the community, perform health assessments and management in the community, and plan health improvement programs and health promotion plans, playing the role of the integrator and coordinator in the community health care team (Chang & Liu, 2008).

The importance of encouraging health care professionals to be involved in the global village was emphasized by the COVID-19 epidemic. Educational institutions should adapt their curricula in response to the increasing value attached to global health and community and public health to address these changes and cultivate a health workforce with vital competencies and capabilities (Grootjans & Newman, 2013).

Public health nurses' (PHNs) main responsibility is to implement national public health policies, especially concerning national health care, medical care, and disease prevention, which are all within the scope of the major responsibilities of PHNs (Bigbee et al., 2010; Clark et al., 2016). Public health nursing practitioners principally work in health centers. The primary services of health centers are associated with the promotion and maintenance of health, disease prevention, and early detection and treatment of diseases, with the aim of ensuring health for all.

In the workplace, conditions such as leadership, organizational resources, organizational manpower, and time distribution play important roles in nursing productivity, as suggested in nursing-related studies (Royer, 2011; Uner & Turan, 2010). Assessment of such conditions involves consideration of numerous personal factors, such as experience, knowledge, attitude, mental and physical preparation, and feelings. However, when analyzing nursing in a challenging situation, key factors that must be considered include nurses' thought processes and psychological and organizational structures (Shapir a-Lishchinsky & Benoliel, 2019; Wiggins, 2012). The empowerment of PHNs' within an organization positively affects psychological factors associated with empowerment.

Community care competencies include health promotion and illness prevention, provision of health education to community residents, and promotion of behavioral changes to enable persons to take control of their health (Bigbee et al., 2010; Bing-Jonsson et al., 2016; Clark et al., 2016). Communication competencies include effective written, oral, and electronic communication with clients and interprofessional teams. The development of consultation and advisory skills and knowledge of languages are also crucial communication competencies (Edmonds et al., 2017). Management competence comprises several facets: employing skills in policy development and program planning; designing, implementing, evaluating, managing, and performing quality assurance on interventions based on the needs of the population; employing problem-solving, critical thinking, and decision-making skills; and performing health assessments of individuals and families during home visits (Piper, 2011).

The definition of empowerment in the literature on community psychology indicates that it can enhance individuals' competence and self-esteem, and thereby enhance their perception of personal control, which directly affects their health condition. This theory of empowerment can be extended to include forging connections with other people and the community, hoping to obtain more power through the changes in the external environment. Studies have demonstrated that empowered nurses more effectively complete their work, display higher organizational productivity, and display more favorable performance in nursing practice (Shapir a-Lishchinsky, & Benoliel, 2019; Edmonds, 2017).

The purpose of the study was to understand the current status of the PHNs providing health services in the community and explore the self-perceived community nursing competence and the psychological and organizational empowerment of the PHNs. PHNs' community nursing competence and empowerment were measured to guide health care institution managers in creating a productive and innovative work environment that fosters a sense of empowerment to foster higher-quality outcomes.

Methods

Study design

This study adopted a cross-sectional survey design to investigate the current state of community health nursing competence and psychological and organizational empowerment among PHNs. Influential factors were also investigated.

Setting and samples

The target population of this study was Taiwanese PHNs. PHNs were enrolled from public health centers situated in Taiwan. Nurses working in a public health service–related setting (such as a community health care center, public health bureau, or community service center). Nurses working in local medical clinics or hospitals were excluded. G power 3.0 analysis was performed to estimate the minimum samples needed to obtain statistically significant results and the most reasonable sample size to secure a reliable interpretation of the study results and prevent excessive data collection. Using constants that were most suitable for multiple regression analysis (effect size of .15, a significance level of .05, and a power of .95), a minimum sample of 155 participants was required. A 20% data wastage rate was adopted, and data from 244 PHNs were collected.

Measures

Two instruments were self-developed by authors and referenced from the study conducted by Chang et al. (2008), a community care nursing competence (CCNC) scale and a community empowerment (CE) scale. A survey was developed by the author to assess factors related to CCNC and CE. The content validity index values for the CCNC and CE scale were 0.90 and 0.92, respectively.

Community care nursing competence

The three sections of the CCNC scale were CC, communication, and management. The first section of the scale consisted of 15 items rated using a 5-point Likert scale, with the responses ranging from *strongly disagree* to *strongly agree* (Cronbach's α = .96). Higher scores indicated higher care competence in providing community health services. The second section of the scale measured communication competence and included eight items rated on a 5-point Likert scale, with the responses ranging from *strongly disagree* to *strongly agree* (Cronbach's α = .97). The third section of the scale measured management competence and included eight items rated on a 5-point Likert scale, ranging from *strongly*

disagree to *strongly agree* (Cronbach's α = .94). The total scale of this study displayed acceptable internal consistency (Cronbach's α = .98)

Community empowerment

The two sections of the CE scale were psychological CE (PCE) and organizational CE (OCE). The first section of the scale comprised 10 items to assess psychological empowerment in PHNs and was rated using a 5-point Likert scale, with the responses ranging from *strongly disagree* to *strongly agree* (Cronbach's α = .93). Higher scores indicated higher psychological empowerment for providing community health services. The second section of the scale measured empowerment in the working organization and comprised 15 items rated on a 5-point Likert scale, ranging from *strongly disagree* to *strongly agree* (Cronbach's α = .96). The total scale of this study was determined to have acceptable internal consistency (Cronbach's α = .96).

Data collection

Between December 2019 and March 2020, 244 questionnaires were distributed to final-year nursing students, and 197 valid questionnaires were returned. Therefore, the response rate of 80.74%.

Data analysis

Descriptive statistics were used to describe the major study variables and sample demographics. A one-way analysis of variance, *t* tests, and Pearson's correlation coefficients were used to analyze the variance and correlations among the demographic data, CCNC, and CE. Furthermore, a stepwise regression was employed to predict the significant factors affecting the CE of PHNs.

Results

Research subject demographic information

Most research subjects were aged between 40 and 49 years (n = 83, 42.10%), and 72.60% were married (n = 143). Most participants (n = 133, 67.50%) had a baccalaureate degree, and 13.70% had a master's degree or higher. The occupation title of most of the participants was "registered nurse" (n = 137, 69.60%). Most subjects worked in public health centers (n = 176, 89.30%). Most respondents had over 10 years of experience in public health nursing (n = 61, 31.0%) (Table 1).

Table 1
Demographic Characteristics of Subjects (N = 197)

Variables	Categories	N	(%)
Age (years)			
	20–29	20	10.20
	30–39	71	36.00
	40–49	83	42.10
	> 50	23	11.70
Marital			
	Single	49	24.90
	Married	143	72.60
	Divorce	4	2.00
	Missing	1	0.50
Education			
	Junior college	37	18.80
	Baccalaureate	133	67.50
	Graduate and above	27	13.70
Workplace			
	Public Health Bureau	10	5.10
	Public Health Center	176	89.30
	Others (ex: Community Service Center...)	5	2.50
	Missing	6	3.10
Work position			
	Registered nurse (Public Health Nurse)	137	69.60
	Head nurse	31	15.70
	Others (Government employee, working in Public Health Bureau, Public Health Center, Community Service Center)	27	13.60
	Missing	2	1.10
Experience in public health (year)			

Variables	Categories	N	(%)
	< 1	29	14.70
	> 1–5	56	28.40
	> 5–10	46	23.40
	> 10	61	31.00
	Missing	5	2.50

Table 2
Analysis of community care nursing competence (N = 197)

Item	Mean ± SD
Community Care (CC)	4.03 ± 0.90
1. Provide services of health check and early screening of related chronic disease	4.59 ± 0.63
2. Provide services of blood pressure, blood glucose and cholesterol measurement	4.41 ± 0.86
3. Regular screening of clients in high-risk groups in the community	4.25 ± 0.88
4. Collection of complete information of clients	3.94 ± 0.91
5. Implementation of advance physical examination and assessment of the clients	3.96 ± 0.91
6. Interpretation of the test reports of clients	4.01 ± 0.94
7. Give individual care plans based on the needs of individual clients	3.75 ± 0.93
8. Prioritize nursing measures based on the needs of the clients	3.82 ± 0.91
9. Assist the clients to stably control the disease condition	3.89 ± 0.87
10. Be aware of changes in the case's condition and adopt proper measures	3.83 ± 0.89
11. Prevent comorbidities in clients	3.77 ± 0.93
12. Provide the clients with disease examination, treatment and follow-up care	4.11 ± 0.83
13. Provide the clients with consultation and health education of chronic diseases	3.97 ± 0.86
14. Follow up whether the clients pay return visits on time and whether they take medication on time and in the right dosage	4.01 ± 0.86
15. Teach the clients and their family members knowledge and skills of related disease care	4.17 ± 0.80
Communication (C)	4.05 ± 0.78

1. Maintain effective communication with the case and listen and accept the issues the case cares about	**4.15 ± 0.80**
2. Provide the clients proper explanation and description when implementing related measures or care plans	4.12 ± 0.80
3. Facilitate the clients' active participation in treatment and care plans	4.01 ± 0.80
4. Have the ability to help the clients communicate and coordinate with other professionals	4.04 ± 0.80
5. Use community resources to achieve various treatments or health promotion	4.00 ± 0.80
6. Have the ability to communicate and coordinate directly with other professionals	4.01 ± 0.80
7. Observe and use non-verbal communication skills to establish a good nurse-patient relationship	4.12 ± 0.80
8. Have the ability to make decisions concerning treatment and care plans with community clients	3.96 ± 0.83
Management (M)	3.98 ± 0.81
1. Effectively allocate time in case management and application to clients with chronic diseases	3.76 ± 0.84
2. Record the case-related care information and keep it properly	3.90 ± 0.85
3. Cooperate with the central government policy to implement chronic disease related care	4.19 ± 0.76
4. Cooperate with the organizational department (such as long-term care and social welfare)	4.10 ± 0.75
5. Guide the clients to move toward self-care	3.97 ± 0.80
6. Implement the evaluation and modification of case care	3.82 ± 0.84
7. Effectively allocate and supply resources	3.99 ± 0.78
8. Organize related patient group or lectures for the clients to share their experience and support each other	4.08 ± 0.76

Community care nursing competence of public health nurses

CCNC involves the aspects of CC, communication, and management. The average score on the overall CCNC was 3.92 ± 0.83, which is between *neutral* and *agree*. Among the dimensions, "Communication" (mean = 4.05 ± 0.78) displayed the highest score, followed by "CC" (mean = 4.03 ± 0.90) and

“Management” (mean = 3.98 ± 0.81). In the “CC” dimension, “Provide health check and early screening services for related chronic diseases” scored the highest (mean = 4.59 ± 0.63), followed by “Provide blood pressure, blood glucose, and cholesterol measurement services” (mean = 4.4 ± 0.86). The items that scored the lowest were “Provide individual care plans based on the needs of individual clients” (mean = 3.75 ± 0.93) and “Prevent comorbidities in clients” (mean = 3.77 ± 0.93). In the dimension of “Communication,” “Maintain effective communication with the client and listen and accept client concerns ” scored the highest (mean = 4.15 ± 0.80), followed by “Provide the clients with proper explanations and descriptions when implementing related measures or care plans” (mean = 4.12 ± 0.80) and “Observe and use nonverbal communication skills to establish high-quality nurse–patient relationships” (mean = 4.12 ± 0.80); the items that scored the lowest were “Make decisions concerning treatment and care plans with community clients” (mean = 3.96 ± 0.83) and “Use community resources to achieve various treatments or health promotion” (mean = 4.00 ± 0.80). In “Management,” “Cooperate with central government policies to implement chronic disease–related care” scored the highest (mean = 4.19 ± 0.76), followed by “Cooperate with the organizational departments (such as long-term care and social welfare)” (mean = 4.10 ± 0.75); the items with the lowest scores were “Effectively allocate time for the case management and application of clients with chronic diseases” (mean = 3.76 ± 0.84) and “Implement the evaluation and modification of case care” (mean = 3.82 ± 0.84).

Community empowerment of public health nurses

The CE of PHNs was investigated to understand the mental state and the perceived CE in the working environment during the prior 6 months. The mean overall CE score was 3.66 ± 0.90, which was between *neutral* and *agree*. The “Psychological Empowerment Scale” dimension scored the highest (mean = 3.91 ± 0.74), in which the item “The work performed is crucial for health promotion” (mean = 4.20 ± 0.67), followed by “The work performed is critical for promoting community health” (mean = 4.19 ± 0.70); the items with the lowest scores were “I am highly proficient in the skills required at work” (mean = 3.74 ± 0.70) and “I can influence what happens within the work unit” (mean = 3.74 ± 0.75). The mean score on the subscale “Organizational Empowerment” was 3.79 ± 0.75, and among the items, “I can satisfy the work requirements and complete the work as scheduled” scored the highest (mean = 3.95 ± 0.64), followed by “The budget is sufficient for the work that must be performed” (mean = 3.91 ± 0.71); the items scoring the lowest were “The human resources (both inside and outside the organization) required to perform the work are provided” (mean = 3.63 ± 0.90) and “I receive sufficient positive encouragement from the supervisor” (mean = 3.65 ± 0.89).

The correlation between the personal attributes, community care competence, and community empowerment of public health nurses

Analysis of the correlation between personal attributes and CCNC revealed that the service unit (F = 1.936, p = .001) was correlated with the CCNC. Fisher’s least significant difference (LSD) indicated that the CCNC of nurses working in health centers was higher than that of those working in health bureaus and other CC locations. The correlation analysis of the personal attributes and CE of the PHNs demonstrated that age (F = 2.179, p = .015) was correlated with CE. Fisher’s LSD further revealed that older and senior nurses displayed higher CE than younger nurses. Pearson’s correlation coefficient was used to analyze the

correlation between the CC competence and the CE of the nurses. The analysis revealed a significant positive correlation (see Table 3 for details).

Table 3

Correlation between community care nursing competence and community empowerment (N = 197)

	CCC-T	CC	C	M	(CE-T)	PCE	OCE
Community Care Nursing Competence Total score (CCNC-T)	1						
Community Care (CC)	0.97 (< .000)***	1					
Communication (C)	0.94 (< .000)***	0.84 (< .000)***	1				
Management (M)	0.94 (< .000)***	0.85 (< .000)***	0.88 (< .000)**	1			
Community Empowerment Total score (CE-T)	0.23 (.002)**	0.21 (.004)**	0.23 (.001)**	0.21 (.003)**	1		
Psychological Community Empowerment (PCE)	0.21 (.003)**	0.20 (.006)**	0.22 (.002)**	0.19 (.007)**	0.20 (< .000)***	1	
Organizational Community Empowerment (OCE)	0.22 (.002)**	0.20 (.004)**	0.23 (.001)**	0.21 (.003)**	0.98 (< .000)***	0.82 (< .000)***	1
*Significant at p < .05							
**Significant at p < .01							
***Significant at p < .001.							
Statistic was based on Pearson correlation analysis.							

Factors affecting community empowerment

Based on these analyses of the factors affecting CE, a multiple regression analysis was performed using statistically significant variables. The results demonstrated that the major predictors were “Age” (B = 0.18, p = .021) and “Communication Competence” (B = 0.17, p = .002). Table 4 displays a summary of the multiple regression analysis of all the variables of the CE.

Table 4

Factors Affecting community empowerment (N = 197)

				Unstandardized Coefficients		Standardized Coefficients	
Model	R	R Square	Adjusted R^2	B	SEB	β	T (*p*)
	0.28	0.08	0.07				
(Constant)				2.28	0.35		6.50
Age				0.18	0.08	0.16	2.33(0.021)*
Communication Competence				0.17	0.08	0.16	2.29(0.002)**
*Significant at p < .05							
**Significant at p < .01							
***Significant at p < .001.							
Statistic was based on stepwise regression analysis.							

Discussion

The largest proportion of participants were aged 40 to 49 years. Furthermore, 31% had more than 10 years of service in public health units, 23.4% had between 5 and 10 years, and 28.4% had less than 5 years. Approximately 60% of participants had a bachelor’s degree. These findings indicate that nursing staff in public health services should be equipped with sufficient field experience to be familiar with conditions in the local community and able to establish partnerships (Polivka et al., 2008). Approximately

40% of the participants did not have a bachelor's degree, which may result in a relatively weak perception of empowerment among the PHNs, both psychologically and concerning the working environment (Chang & Liu, 2008; Chang et al., 2008).

CCNC comprises three dimensions: CC, communication, and management. Communication items displayed the highest scores, indicating that PHNs should be equipped with strong communication competencies because these enable them to establish nurse–patient relationships and understand clients concerns when providing care plans; this finding accorded with results reported in the literature (Bigbee et al., 2010; Clark et al., 2016; Siemon et al., 2018).

The CC results indicated that health checks and early screenings of related chronic diseases were the services most commonly provided by PHNs, suggesting that the PHNs' care services were primarily focused on preventive health services. Studies have reported that PHNs provide services for community health promotion and preventive care services and that the frequency of providing chronic disease care services is the highest (Bigbee et al., 2010; Cole et al., 2011; Bing-Jonsson et al., 2016). However, the participants reported that their competencies were insufficient when providing individual care plans based on client needs and preventing comorbidities, which may be related to PHNs' experience in the care of disease (Clark et al., 2016; Edmonds, et al., 2017). When the COVID-19 pandemic occurred in 2020, communities faced a tremendous public health threat. Therefore, PHNs should exercise caution when visiting clients in the community and increase their relevant knowledge of emerging infectious disease and prevention measures. Furthermore, PHNs should also instruct the public on disease prevention and provide referrals to competent professionals to control hazardous public health situations (Cole et al., 2011; Bing-Jonsson et al., 2016).

The care management model in communities is currently a top–down model, which prioritizes client compliance and ignores their autonomy. Furthermore, PHNs often abide by existing health education brochure content instead of considering the clients' lifestyles and needs, which inhibits PHNs from providing clients with in-depth and long-term chronic disease management (Flowers et al., 2020).

Assessment of the health risks and impacts of health-related cultural beliefs and practice is considered the competence to promote health and prevent diseases. Nurses may provide health education on the social and behavioral factors that affect the health of individuals and groups. Furthermore, strategies are employed to promote behavioral changes.

In terms of "Communication," PHNs could "Maintain effective communication with the client and listen and accept client concerns," "Provide the clients with proper explanations and descriptions when implementing related measures or care plans," and "Observe and use nonverbal communication skills to establish high-quality nurse–patient relationships," indicating that communication plays a crucial role in CC services. The results of this study demonstrated that communication competence affects nurses' perception of empowerment, a finding which accords with findings in the literature (Clark et al., 2016; Bing-Jonsson et al., 2016). However, the nurses perceived personal insufficiencies in the items of "Make decisions concerning treatment and care plans with community clients" and "Use community resources

to achieve various treatments or health promotion," demonstrating that nurses must improve communication with the clients regarding their needs when discussing care plans (Bigbee et al., 2010; Chang et al., 2008).

For "Management" in the community, "Cooperate with central government policies to implement chronic disease–related care" and "Cooperate with the organizational departments (such as long-term care and social welfare)" were the most critical, demonstrating that nurses must adhere to health care policies when promoting public health by professional contacts and discussion of CC services among chronic disease care businesses and relevant units of long-term care and social welfare institutions. However, most participants reported that "Implementing the evaluation and modification of case care" was difficult in managing chronic disease cases, which could be related to the accumulation of practical experience in the community or work overload. PHNs understood that developing community ability by using community-oriented programs is the most important core concept (meaning). However, such effort requires more time than individual public health services (MacDonald & Schoenfeld, 2003).

The CE results indicated that the PHNs believed that "The work that is performed is critical for health promotion" and "The work that is performed is crucial in promoting community health," and these beliefs were associated with psychological empowerment. Regarding organizational empowerment, the participants with a self-perception of "I can meet the work requirements and complete the work as scheduled" could also perceive that they were empowered in the workplace, which improved their work efficiency (Flowers et al., 2020).

The results of this study indicated that access to organizational information had a positive impact on community competence. These results accorded with previous studies. PHNs are better equipped to understand the needs and the goals of the organization when they have more information, which can improve work efficiency. This result supported the premise of the cognitive model of empowerment and accorded with studies that stated that employees with stronger self-efficacy would make more efforts to cope with the challenges of client outcomes and would feel more effective in their work (Piper, 2011; Royer, 2011; Flowers et al., 2020).

A significant positive correlation was observed between the degree of chronic disease care implementation and the perception of empowerment, indicating that more frequently performing CC was associated with a higher score on relative empowerment perception, which accords with results from numerous studies, including a study on empowering PHNs in the care of clients and improving PHNs' self-efficacy (Royer, 2011; Cole, 2011; Clark et al., 2016), a study on the effect of psychological empowerment on CC competence (Chang et al., 2008), and a study on the positive effects of self-efficacy on work performance (Chang & Liu, 2008; Piper, 2011). The results of the present study indicated that PHNs' competence in the implementation of CC management and the degree of implementation increased when their perception of psychological empowerment and empowerment in the workplace was enhanced.

Chang et al. (2008) suggested that psychological empowerment could be encouraged and promoted through education and training and by sharing work experience within groups. They further suggested that supervisors could have active discussions with nurses to provide them the opportunity to participate in the decision-making process, which could enhance their influence at work. Furthermore, the World Health Organization (WHO) mentioned that for the innovative care of chronic diseases, community-related care management and innovative measures are being developed in the world and include education, self-management training, and the provision of services by community volunteers and nonprofessional personnel in the community (WHO, 2020). Empowering PHNs can enable them to use this experience to empower clients with chronic diseases to achieve the ultimate ideal state of CC.

Certain aspects of psychological empowerment, such as the sense of self-meaning of work, care management competence, and decision-making related participation, can be enhanced with related resources, such as more work-related information, specific suggestions for information, addressing problems, and positive encouragement, all of which can enable PHNs to be independent and able to leverage all community resources to manage chronic diseases. PHNs would thus be able to provide patients and their family members with relevant chronic disease care information to address their concerns and implement strategies with partner organizations to improve the quality of care for clients with chronic disease in the community.

CE reflects the continuous shifts in power relations between different individuals and social groups, whereas empowerment, in the broadest sense, refers to the process by which people with less power work together to increase control over events that could determine their lives and health. The combination of organizational and psychological aspects of employee empowerment can be understood as a cognitive state in which power-sharing, competence, and value internalization in an organization can be experienced. Public nursing activities include cooperation in communities, health education, and policy development to manage priorities, which are decided through a continuous and comprehensive people-oriented assessment. PHNs are professionals from interprofessional teams and organizations (including different levels of government, communities, nongovernmental organizations, foundations, policy think tanks, academic institutions, and other research institutes).

Professional competence is crucial in providing quality health care services. Quality of care requires that nursing staff members possess the competencies needed to satisfy complex health care demands. Internationally, studies have indicated that higher staffing a higher number of nurses in general health care are associated with a higher quality of care, improved patient outcomes, and fewer adverse events.

Limitations

This study only accounted for 8% of the variance in CE, despite considering organizational and psychological empowerment. Therefore, further research on the predictors of CE is required. Factors other than the PHNs' CCNC applied in this study (organizational and psychological empowerment), such as

supervisor worker relations and level of commitment, should be included to account for potential variances in CE.

Conclusion

For practical application, the research results demonstrated that CC competence was positively correlated with empowerment perception. Therefore, psychological and organizational empowerment perceptions among PHNs should be enhanced. PHNs could share the difficulties they encounter at work in regular education meetings. Moreover, regarding organizational policy, retention measures or related measures should be developed to reduce PHNs' sense of helplessness when facing job challenges. Furthermore, when organizing community activities, more relevant units, such as the head of the district subdivision, community development units, and CC centers, should work with local departments in the community to establish partnerships through volunteer training and strengthening the connection of community resources, thereby improving or developing innovative chronic disease care management models to benefit residents in the community.

Furthermore, this study determined that in addition to basic competencies in general chronic disease care management, PHNs in the community should gain experience with clients with chronic diseases or residents in the community to improve their communication and to enable them to share their experiences. Relevant courses should be included in the in-service education courses for PHNs. PHNs should be instructed in policy awareness and the basic business of the relevant government health agencies and parallel units during their formative education. Furthermore, PHNs should be provided with relevant resources, and encouraged to use them, to enable them to integrate resources from parallel units and medical networks.

PHNs are poised to lead advancements in public health and health care, especially in terms of solving health inequities. PHNs with a bachelor's degree or higher are equipped to handle numerous determinants of health and fully participate in the challenges of achieving and maintaining public health. The scope of their responsibilities include community-building, health promotion, policy reform, and implementing system-level changes to promote and protect public health. PHNs, as the leaders in the improvement of health and the promotion of health equality, play a crucial role in the future of health care.

Abbreviations

CCNC
Community Care Nursing Competence; CE:Community Empowerment; PHNs:Public health nurses; CC:community care; PCE:psychological CE; OCE:organizational CE; LSD:least significant difference; WHO:World Health Organization

Declarations

Ethics approval and consent to participate

This study has been approved by the Ethical Committee of China Medical University, Taichung, Taiwan for Research Data on Nov. 11, 2019 (decision number CRREC-108-125). Researchers explained the research purpose, process, and protection of personal rights to the participants, and informed consent forms were provided before data collection. Written information about the study, including the participants' legal rights regarding participation and confidentiality, was provided. Participants were assured that it was voluntary to participate in the study and that they were free to withdraw from the study at any time. The PHNs agreed to complete the questionnaire surveys after the end of the educational workshop training.

Consent for publication

Not applicable.

Availability of data and material

The dataset and analyses are not currently publicly available as further articles based on the dataset are planned. However, the materials could be available from the corresponding author upon reasonable requests.

Competing interests

The authors declare that there are no competing interests

Funding

None of the study sponsors or funding sources had a role in the design of the study.

Author contributions

CPK was responsible for the study idea and design. HMC and YLH performed the data collection. SYYperformed the data analysis. CPK and PLH was responsible for the drafting of the manuscript. PLH made critical revisions to the paper for important intellectual content. All authors have read and approved the final manuscript.

Acknowledgements

We sincerely express our appreciation to the experts in the community health nursing fields with academic, policy, and workforce knowledge for helping us to adapt the questionnaire to the context, and for assessing the content validity of the questionnaire.

Implications for public health

The competencies of care, communication, and management affected CE among PHNs. Psychological and organizational empowerment in public health service is related to clinical community health nursing competencies. Age and communication competence predict CE among PHNs.

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