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Factors influencing home care workers' loyalty in long-term nursing services

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Given the high prevalence of clinical disease and disability among elderly individuals, there is an ever-greater demand for social care services. Despite this demand, the elder care sector has the largest labor shortage levels among all front-line providers of long-term care services. Strategies to reduce turnover and improve employee loyalty have therefore become an important issue. The purpose of this study is to identify the factors that affect the loyalty of home care workers. Following a literature review, we determined four independent variables—job satisfaction, work engagement, organizational citizenship behavior (OCB) and transformational leadership—and investigated their relevance to, and ability to predict, home care workers' employee loyalty. A total of 455 home care workers participated in the anonymous survey. The results of multiple regression analysis indicate that the adjusted coefficient of determination (R^2) of the model explained 65.6% of the variance of the dependent variable, showing high explanatory capacity. The influences of the four independent variables on employee loyalty were all significant and positive, with the greatest impact on employee loyalty being exerted by OCB (Adjusted $\beta = 0.400$), followed by job satisfaction and then transformational leadership. The three hierarchical regression models provided evidence for the partial mediating effect of job satisfaction, work engagement and OCB between transformational leadership and employee loyalty. Our findings suggest that managers of home care institutions should adopt a transformational leadership style to motivate home care workers' job satisfaction, work engagement and OCB. Such an environment not only help retain employee but also attract more young people to join the ranks of the home care profession, which will help solve fundamental short-staffing problems.

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Introduction

Population ageing is a global phenomenon and an increasingly serious problem for many countries. Along with common chronic diseases and functional degradation in elderly individuals, the long-term care needs of the elderly will also increase (Liu et al., 2018; Nadash and Shih, 2013). As more people choose to stay in the community for long-term care, home care workers can also successfully provide care services to those elderly people who stay at home, demonstrating the importance of home care services in the long-term care industry (Gleason et al., 2016). Home care workers are indispensable manpower in long-term care programs (Butler et al., 2014). The U.S. Bureau of Labor Statistics has predicted that demand for home care jobs will increase rapidly by 38% through 2024, making it the fifth fastest-growing industry in the United States (Franzosa et al., 2018).

Past research has indicated that insufficient manpower can be seen as a compromise concerning elder care (Butler et al., 2014). Because home care workers occupy an industry with a relatively unstable income and work environment, numerous manpower loss problems have arisen (Faul et al., 2010). Home care workers usually work alone and face considerable stress at work, needing to care for sick, dying, aggressive or unconscious service recipients (Franzosa et al., 2019). As home care workers may be some of the most frequent visitors to the home, with long-term contact with patients, they occupy a special position as they can effectively stay informed on the health status of their elderly patients and provide information and feedback through effective communication with them to avoid possible problems before they arise (Yoon et al., 2016). These features help reduce the elderly mortality rate and prolong the time spent in home care, thus representing a broader connection between the elderly and the health care system (Nielsen et al., 2009). Because home care workers frequently interact with the elderly alone, their values, attitudes, physical and mental health, and the quality of the elder care services they provide are very important resources for the medical team (Franzosa et al., 2018; Ohta et al., 2020; Reckrey et al., 2019). However, while home care workers provide the most direct care for the elderly at home, these workers have not been studied sufficiently (Ginsburg et al., 2016).

In Taiwan, home care workers are not only the main service providers within the elderly welfare service program but also the front-line professionals who reach out to the elderly (Lee, 2012). However, the unique nature of home care work, due to the heavy workload of home care workers, the lack of support from peers and leaders, the need to serve alone outside the organization (Westerberg and Tafvelin, 2014), and the daily changing working environment, makes it difficult for home care service agencies to effectively supervise and control service provision and to predict the effectiveness of work and achieve organizational goals (Get, 2018). It will be a challenge to stabilize this group of workers who provide home care services and help them provide better care services for elderly patients (Faul et al., 2010; Heydari et al., 2016). To retain the growing group of home care workers, ensuring their physical and mental health and stable working environment has become an important issue for families, employers and policy-makers (Butler et al., 2014; Franzosa et al., 2019). In Taiwan, the shortage of manpower is not limited to care services but includes increasing demand for residential service manpower in general. Even well-trained home care workers are difficult to retain, and thus, how to reduce turnover and improve employee loyalty has become an important issue.

Leadership style plays an important role in maintaining employee loyalty to the organization. From a management perspective, institutions have been deeply interested in how employees feel about their work and the extent to which they are willing to contribute to the organization (Ariani, 2013; Babcock-Roberson

and Strickland, 2010). From the employee perspective, when supervisors show support and respect for home care workers, the workers will also show that they value their supervisors and feel grateful. Home care workers want most to be able to establish more contact and communication with their supervisors and one another and feel that they are valued and listened to by their supervisors (Franzosa et al., 2019). An empirical study confirmed that transformational leaders were more likely than non-transformational leaders to help home care workers continue to choose this career (Lee, 2012). Most people spend considerable time at work, regard work as an important part of life, and may also be stimulated by work and become involved with it, so work engagement has become an indispensable and important factor in most people's lives. When employees feel an important connection to their work, their work is meaningful, which is often reflected in work results and effectiveness (Van Wingerden and Van der Stoep, 2018). Turnover intention is the main predictor of actual turnover behavior and has a positive relationship with work engagement; organizational citizenship behavior (OCB) is an important part of the organization and can effectively assess employees' intention to quit, help stabilize organizational growth, and is a kind of civic behavior that is beneficial to both the organization and service users (Get, 2018). The negative impact of home care workers' unfavorable working environment and working conditions is significant not only for the recruitment and retention of outstanding residential service talent but also for the performance of long-term care institutions and even the effectiveness of elder care (Morris, 2009). Past research on home care worker behavior has focused on the effects of work stress, working conditions, and willingness to leave, but there has been less exploration of the potential influencing factors of employees' loyalty, particularly among home care workers. There has been a research lack of literature on the employee loyalty of home care workers. Therefore, this study aims to investigate the factors influencing the employee loyalty of home care workers in long-term care institutions.

Based on the above research motivations, this study is expected to fill the gap in the research on the impact of home care workers' employee loyalty. In practice, it is expected that the results and findings of the research will help home care service providers understand the factors influencing home care workers' employee loyalty and can serve as a reference for the development of follow-up long-term care policies, enabling institutions and competent authorities to evaluate good working environments, stabilize human resources, reduce personnel turnover, retain residential talent and improve the operational performance of institutions. Furthermore, such advancements will also help home care workers meet the physical, psychological and social needs of the elderly with the most appropriate long-term care and quality services, thereby improving comprehensive care and quality of life for elderly and disabled patients.

Literature review

Employee loyalty. Employee loyalty can be defined as the intensity of an individual's identification with the organization and is most often explored as an underlying psychological construct that differs from an attitude or behavioral construct (Wymer and Rundle-Thiele, 2016). Employee loyalty refers to an employee taking the company's goals as their own, developing an attachment to the company, and wanting to stay there. Loyalty comprises the employee's positive attitude towards the company, willingness to learn new skills, knowledge sharing, a strong sense of belonging and pride in the organization, protecting the organization from criticism at all times, and committing to contributing to the organization to achieve goals (Yao et al., 2013).

Employee loyalty represents the individual's preference to stay with the original employer and can be used to assess the organization's working environment and management quality, which are especially important indicators for growing organizations. Loyal employees can effectively reduce costs related to the recruitment and training of new employees, especially in the health care industry environment, which requires highly skilled professionals. Employee turnover in an organization not only increases organizational costs, such as rerecruitment and training, but also directly affects the quality of service and security issues for customers (Becton et al., 2017; Hancock et al., 2013). Skilled and loyal employees are seen as a true source of profit within an organization, and having a team with high loyalty is an organizational advantage that can reflect its overall performance; in other words, talent retention and employee loyalty can lead to a successful organization (Rehman et al., 2019; Yao et al., 2019). Because employee loyalty involves a sense of responsibility and emotional response to the organization, previous studies have incorporated organizational commitment into employee loyalty as an internal loyalty to the organization expressed through emotions, attitudes, and behaviors (Muthuveloo and Rose, 2005). Organizational commitment is linked to employee loyalty when employees and organizations share the same values or employees want to fulfill the organization's obligations; this commitment encourages employees' loyalty and willingness to contribute beyond their own interests for the welfare of the organization (Wymer and Rundle-Thiele, 2016; Mayfield and Mayfield, 2012; Thamrin, 2012). Because front-line employees form a relationship between customers and service quality, employee loyalty can be seen as a predictor of an organization's revenue growth and could even be more important to the organization than customer loyalty. Past research on home care workers has also pointed out that it is difficult to directly supervise employees due to the characteristics of the nursing service industry, so it is important to establish good human resource management to gain employees' trust and loyalty (Singh and Rangnekar, 2019). To maintain the continuous growth and sustainability of the organization, organizations can regularly assess employee loyalty to help them fully understand employees' support, which is key to improving organizational competitiveness and to building a high-performance team (Wymer and Rundle-Thiele, 2016).

The Organizational Commitment Questionnaire (OCQ) is most commonly used to evaluate employee loyalty. Scholars have also noted that the measurement results of OCQ have high international consistency and reliability and, more specifically, can show the degree of employees' loyalty, trust, and willingness to achieve organizational goals (Agyemang and Ofei, 2013). Published studies have found that the loyalty scale has slightly lower reliability (Olson-Buchanan and Boswell, 2002), so numerous studies have also applied organizational commitment to measure employee loyalty (Ahmad and Oranye, 2010; Tsui et al., 2013). Therefore, in accordance with the research purpose of this study and the literature review, the measurement of employee loyalty in this study references two aspects: organizational commitment and loyalty.

According to the job demands-resources model (JD-R model), the main cause of employees' job burnout is the imbalance between job requirements and job resources, resulting in poor employee mental or physical performance. Job resources enhance employees' motivation at work, such as work engagement and job satisfaction. Sufficient job resources can not only balance the negative effects of job requirements but also satisfy employees' psychological needs, thus enhancing their work willingness and work efficiency (Demerouti et al., 2001). Thus, this study seeks to investigate the factors that influence home care workers' loyalty based on the JD-R model.

Job satisfaction. Employees' attitudes towards work are reflected in work behavior, and while not all employees who are dissatisfied with their work will resign, dissatisfaction may lead to reduced effectiveness and turnover intention (Zaghloul et al., 2008). Published studies have found evidence that employees with high job satisfaction are willing to put more effort into their work, thereby improving work effectiveness (Thamrin, 2012; Qureshi et al., 2013). Many previous studies have considered home care workers' job satisfaction, finding that home care workers who are satisfied with their work will regard finding joy in work by helping service users as a life goal; even if the work is stressful and busy, they still have a high willingness to stay with their company. There is a positive correlation between employee satisfaction and the intention to stay with one's organization (Sayin et al., 2019). Supervisor support, job challenges, training and the benefits that can be derived from the institution are positively correlated with job satisfaction (Yoon et al., 2016). A single-question survey to measure the overall job satisfaction of elderly care workers has been used by various previous studies (Nielsen et al., 2009; Lee, 2012). Based on the above literature on the definition and measurement of job satisfaction, this study uses a single question to measure home care workers' job satisfaction.

For employees, job satisfaction increases a sense of accomplishment, productivity, intention to stay, and loyalty. Satisfied employees are more loyal to their organization, which they demonstrate by working hard to provide customers with high-quality services (Borzaga and Tortia, 2006; Yee et al., 2010). Home care workers with higher job satisfaction also have lower turnover rates (Stone et al., 2017). Job satisfaction is positively correlated with employee loyalty (Matzler and Renzl, 2006), and numerous studies have also shown that employees' job satisfaction positively affects employee loyalty (Zhu et al., 2014). Scholars have pointed out that, according to management theory, supporting employees' job satisfaction and adopting a coordinated policy exert an important impact on improving employee loyalty (Matzler and Renzl, 2006; Hussein et al., 2014; Lee et al., 2008). Inferring from the above literature, job satisfaction positively affects the employee loyalty of home care workers, so this study proposes the following hypothesis:

H1: Home care workers' perception of job satisfaction exerts a significant positive impact on employee loyalty.

Work engagement. Schaufeli, Bakker and Salanova (Schaufeli et al., 2006) considered work engagement as not a temporary status but a more permanent situation of emotional cognition. Work engagement is an individual's psychological belief in his or her work, a state of belief regarding the importance of work, a person's enthusiasm and dedication to work, and a positive attitude towards his or her organization (Ariani, 2013). Schaufeli and Bakker (Schaufeli and Bakker, 2004) divided work engagement into three characteristics. "Vigour" is a mental state at work that makes people willing to engage in work and able to persevere even through difficulties. "Dedication" refers to feeling that work is meaningful, enabling one to participate actively in the work and be constructive, enthusiastic, proud and challenging. "Absorption" refers to concentrating on work and feeling difficulty withdrawing from it. The Utrecht Work Engagement Scale (UWES) scale is based on these three configurations, "vigour", "dedication", and "absorption", and has been used in many past studies (Geldenhuis et al., 2014; González-Gancedo et al., 2019).

As long as the organization adopts a commitment policy that motivates employees to be actively engaged, employees will find meaning in their work and show loyalty to the organization (Geldenhuis et al., 2014). Employees who think that their work is

meaningful have higher loyalty and less chance of leaving the organization than those who do not (Van Wingerden and Van der Stoep, 2018). The study by Beukes and Botha (Beukes and Botha, 2013) also found that caregivers' engagement was positively correlated with organizational commitment. Therefore, based on the literature review, this study proposes the following hypothesis:

H2: Home care workers' perception of work engagement exerts a significant positive impact on employee loyalty.

Organizational citizenship behavior. Organizational citizenship behavior (OCB) describes a variety of behaviors that employees are willing to perform spontaneously through inherent self-motivation, without being subject to the formal reward system of the organization, that are in addition to the formal norms of the organization and actively exceed the work roles regulated by the organization. Although OCB is not formally regulated by the organization, it is an organizational requirement because it helps effectively promote operations (Lee and Allen, 2002; Podsakoff et al., 2013). Podsakoff et al. (2000) divided OCB into seven facets: helping behavior, individual initiative, civic virtue, organizational loyalty, organizational compliance, sportsmanship and self development. Individual initiative is beneficial to the organization and is also known as OCB-Organization (OCB-O). OCB-O involves voluntary acts of helping others and innovating in the organization, performing work with extra effort and enthusiasm, and encouraging others in the organization to do the same (Podsakoff et al., 2000). Research has shown that high OCB-O represents a closer relationship between employees and the organization (Lee and Allen, 2002). Therefore, if managers can improve the organizational atmosphere or communication channels with employees, employees' attachment to the organization can be increased, which will promote their OCB to improve organizational effectiveness (Qureshi et al., 2013; Vignoda-Gadot, 2006). OCB-O, particularly types such as constructive advice and principled views for the organization, can help the organization operate effectively and also sends a behavioral message regarding employee culture (Perreira et al., 2019). Based on the definition of OCB and the purpose of this study, this study applies the OCB scale from Ginsburg et al. (2016) and Lee and Allen (2002) to measure home care workers' perception of OCB.

The organizational loyalty in the OCB includes employees' loyalty drivers, which can protect organizations from external threats and support organizational goals (Podsakoff et al., 2000). Past empirical studies have surveyed caregivers in public and private hospitals and found that OCB is a source of competitive advantage in hospital performance, improving not only patient satisfaction and employee loyalty but also service quality (Rezaei Dizgah et al., 2012). Inferring from the above literature, this study proposes the following hypothesis:

H3: Home care workers' perception of organizational citizenship behavior exerts a significant positive impact on employee loyalty.

Transformational leadership. A leader refers to a person who has the ability to influence, motivate, and promote the ability of members of an organization to contribute to its success; leadership is the most critical factor for any type of organization and plays an important role in determining its work effectiveness (Rehman et al., 2019). Transformational leadership theory is one of the most high-profile leadership theories and has been discussed increasingly often in the literature in recent years (i Solà et al., 2016; Piccolo et al., 2012). This type of leadership is a

process of emotional leadership that tends to be more efficient than occasional rewards and other forms of leadership (Yahaya and Ebrahim, 2016), making it one of the most important styles among the many theories of leadership. Such leadership can focus on the needs of followers, influence their behaviors and attitudes, and stimulate employees' potential to surpass themselves (Piccolo et al., 2012). Transformational leadership can also help employees have better relationships with their superiors, make greater contributions and be more willing to make additional efforts for the organization (Bass, 1990).

Transformational leadership includes idealized influence, inspirational motivation, intellectual stimulation and individual consideration (Bass and Avolio, 1990). Idealized influence is the setting of a spiritual example for employees to imitate or follow up; inspirational motivation is the delivery of visions and goals to inspire in employees a sense of mission and identification with the purpose of the organization; intellectual stimulation means that intellectually stimulating leaders can devise rational solutions to teach employees to solve old problems from new perspectives; individual consideration is the understanding of differences among employees, allowing leaders to give individualized guidance and care and to meet the emotional needs of each employee (Bass, 1990). Transformational leaders can cultivate employees' pride and give them greater confidence to improve their work effectiveness based on providing proactive care, respect and support (Thamrin, 2012). This study used the scale of transformational leadership from a previous study (Lee, 2012) that surveyed 1828 home care workers in the United States based on four dimensions, idealized influence, inspirational motivation, intellectual stimulation and individual consideration, as a measurement of the perceived transformational leadership of home care workers.

In primary health care, managers' leadership style is defined as an attitude, behavior, belief and value (i Solà et al., 2016). Prior surveys of caregivers in nursing facilities have found that when leaders provide support, caregivers become more engaged and regard mistakes as opportunities to learn (Graf et al., 2016). Home care workers' managers are formally hired by their organization to manage and support it, provide coordination services to customers and home care workers, assign and supervise the relationship between home care workers and customers, and decide whether to continue or end the home care workers' employment (Chon, 2013). In addition, in the field of elder care, only the home care workers provide care services at home, and leaders do not directly contact elderly patients, nor do they know their health status through reports from home care workers. All the leaders can do is to encourage home care workers to solve problems and take responsibility. This situation shows that transformational leaders play a particularly influential role in the field of health care (Nielsen et al., 2009; Lundgren et al., 2016). Transformational leaders can provide home care workers with available resources and social support and encourage employees to learn domain-related skills, thereby helping employees find their work goals more meaningful through social recognition and positive support attitudes (Gruman and Saks, 2011).

Published research papers have found that the vision sharing of transformational leadership can help employees feel that their place in the organization is important (Akbari et al., 2017). In addition to building trust between supervisors and employees, transformational leadership can also encourage employees and has been confirmed to positively influence their loyalty to the organization (Danso et al., 2020). Studies have also shown that female transformational leaders have a lower sense of trust and employee loyalty (Braun et al., 2012). In addition, transformational leaders, regarded as a job resource, could elevate home care workers' motivations according to the JD-R model (Demerouti

et al., 2001). When home care workers' supervisors adopt transformational leadership, home care workers' psychological needs can be satisfied and motivations at work can be encouraged. This will enhance home care workers' work willingness and work efficiency and increase their loyalty toward their works. The above literature review suggests that transformational leadership can positively influence home care workers' loyalty, so this study proposes the following hypotheses:

H4: Home care workers' perception of transformational leadership exerts a significant positive impact on employee loyalty.

H5: Increases in home care workers' motivation (job satisfaction, work engagement and organizational citizenship behavior) will mediate the relationship between transformational leadership and employee loyalty.

Methods

To explore the relevance and predictive capacity of home care workers' perceptions of job satisfaction, transformational leadership, work engagement and OCB to employee loyalty, based on the literature discussed above, this study derives the following four research hypotheses:

H1: Home care workers' perception of job satisfaction exerts a significant positive impact on employee loyalty.

H2: Home care workers' perception of work engagement exerts a significant positive impact on employee loyalty.

H3: Home care workers' perception of organizational citizenship behavior exerts a significant positive impact on employee loyalty.

H4: Home care workers' perception of transformational leadership exerts a significant positive impact on employee loyalty.

H5: Increases in home care workers' motivations (job satisfaction, work engagement and organizational citizenship behavior) will mediate the relationship between transformational leadership and employee loyalty.

This study adopted a cross-sectional research design that used the questionnaire survey method. The questionnaire content was designed based on relevant literature and the work characteristics of home care workers in Taiwan. Five scholars with high educational backgrounds and experts with practical experience were invited to review the semantics and relevance of the questionnaire. After the content was corrected based on these suggestions, the questionnaire was summarized and modified to meet the research aims.

The instrument used in this study included six questionnaires on employee loyalty, job satisfaction, transformational leadership, work engagement, OCB and home care workers' personal information. The questionnaire on home care workers' employee loyalty was divided into two categories, with eight questions examining organizational commitment and five questions examining loyalty, based on the suggestions from previous studies by Matzler and Renzl (2006) and Yee et al. (2010). The statements of items concerning organizational commitment included "I talk up this organization to my friends as a great organization to work for," "I am proud to tell others that I am part of this organization," "Deciding to work for this organization was a definite mistake on my part," "I am willing to put in a great deal of effort beyond that

normally expected in order to help this organization be successful," "I truly care about the fate of this organization," "It would take very little change in my present circumstances to cause me to leave this organization," "There's not too much to be gained by sticking with this organization indefinitely" and "I find it difficult to agree with this organization's policies on important matters relating to its employees." The statements of items concerning loyalty were "I speak positively about my company when talking to customers," "I speak positively about my company when talking to friends and relatives," "I can recommend the products and services of my company to others," "I would like to stay with this company also in the future" and "Turn down other jobs with more pay in order to stay with this company." A five-point Likert scale (strongly agree = 5 to strongly disagree = 1) was used to measure the degree to which the subject subjectively felt the statement of the question.

Home care workers' job satisfaction is a response to the overall state of their current work. Compared to multiple questions, the overall evaluation method, which used a single question to measure job satisfaction, not only collects all the key points concerning job satisfaction but is also more efficient and easier for subjects with different education levels to complete and can reduce the occurrence of resistance psychological phenomena caused by survey fatigue (Graf et al., 2016). The single question about job satisfaction also has stability and effectiveness; scholars have noted that the minimum reliability coefficient for a single question concerning job satisfaction is between 0.70 and 0.80, which is comparable to the internal consistency and reliability of multiple measures of job satisfaction (Graf et al., 2016; Bethell et al., 2018). Therefore, this study referred to the studies of Nielsen et al. (2009) and Lee (2012) in its use of a single question, "How satisfied are you with your current job?", as the measurement of home care workers' perception of job satisfaction. A five-point Likert scale (strongly satisfied = 5 to strongly dissatisfied = 1) was applied to measure the degree of satisfaction.

This study used the UWES scale, in reference to Schaufeli et al. (2006)'s study, as a tool to measure work engagement, as it has also been shown to be suitable for health care workers (Torabinia et al., 2017). The work engagement scale was divided into three aspects, vigour, dedication, and absorption, for a total of 9 questions: "When I get up in the morning, I feel like going to work," "At my work, I feel bursting with energy," "At my job I feel strong and vigorous," "My job inspires me," "I am enthusiastic about my job," "I am proud on the work that I do," "I get carried away when I am working," "I feel happy when I am working intensely" and "I am immersed in my work." A five-point Likert scale (strongly agree = 5 to strongly disagree = 1) was used to measure the degree to which the subject subjectively agreed with each statement.

This study referenced the previous studies of Ginsburg et al. (2016) and Lee and Allen (2002). The OCB scale has a total of 12 questions, including two facets: effective and innovative work behaviors and behaviors that are beneficial to the organization. The statements included were "I often come up with new ways to do my work," "I often suggest to my coworkers new ways about how to improve work," "I often suggest ways to improve rules or policies," "I often change how I work to get more done in the time I have," "Attend functions that are not required but that help the organizational image," "Keep up with developments in the organization," "Defend the organization when other employees criticize it," "Show pride when representing the organization in public," "Offer ideas to improve the functioning of the organization," "Express loyalty towards the organization," "Take action to protect the organization from potential problems" and "Demonstrate concern about the image of the organization." The scale applied a five-point Likert scale (strongly satisfied = 5 to strongly

Table 1 Characteristics of sample size (N = 442).

Variable	Sort	n (%)	Mean	SE	p-value
Gender	Female	392 (88.7)			0.613
	Male	49 (11.1)			
Age	20–30 years old	9 (2.3)	54.33	9.668	0.001***
	31–40 years old	27 (6.1)			
	41–50 years old	106 (24)			
	51–60 years old	168 (38)			
	>60 years old	132 (29.9)			
Education	Elementary school and below	33 (7.5)			0.022*
	Junior High School	92 (20.8)			
	High School (vocational)	212(48)			
	College	100 (22.6)			
Marriage status	Married/Cohabiting	250 (56.6)			0.066
	Divorce/Widow	129 (29.1)			
	Unmarried	57 (12.9)			
Seniority of home care	<1 year	52 (11.8)	94.35	71.466	0.001***
	1–5 years	112 (25.3)			
	5–10 years	157 (35.5)			
	>10 years	121 (27.4)			
Seniority of current job	< 1 year	68 (15.4)	84.16	66.3	0.001***
	1–5 years	122 (27.6)			
	5–10 years	153 (34.4)			
	>10 years	99 (22.4)			
Work status	Full-time	418 (94.6)			
	Part-time	14 (3.2)			

* $p < 0.05$; *** $p < 0.001$.

dissatisfied = 1) to measure the degree of the subject's subjective response to each statement.

Based on the definitions by Bass and Avolio (1990) and in reference to Lee (2012)'s research, this study adopted four questions as the scale of transformational leadership: "My supervisor provides clear instructions when assigning work," "My supervisor tells me when I am doing a good job," "My supervisor listens to me when I am worried about a patient's care" and "My supervisor is supportive of progress in my career, such as further training." A five-point Likert scale (strongly agree = 5 to strongly disagree = 1) was used to measure the degree to which the subject agreed with each statement.

In addition, to maintain the reliability and validity of the measurements, this study performed reliability analyses. According to the collected data, the overall Cronbach's α coefficients of the scales of employee loyalty, transformational leadership, work engagement and OCB ranged between 0.85 and 0.95. The measurement results of the display questions had high internal consistency and reliability. The results of factor analysis showed that the questions concerning the four variables were extracted as the same factor, and the total variance explained ranged between 49.412 and 73.216%.

In summary, this study used the mature scales proposed by previous research as the basis for factor classification and analyzed the factors based on the variables of transformational leadership, work engagement, OCB and employee loyalty. The international consistency and reliability of the variables has been verified. Before the factor analysis, the Kaiser-Meyer-Olkin (KMO) values and the Bartlett's test of Sphericity had been processed. The results showed that the four scales used in this study all had highly significant correlation coefficients, and the factor loadings of all questions were greater than 0.50, demonstrating that the questionnaire had good construct validity.

This study targeted seven long-term care service providers in Taiwan that provide home care services. All home care workers at these institutions were invited to participate this study, regardless

of their working experience. In this study, the home care workers of each home service institution were issued a self-filled, structured questionnaire when they routinely returned to the institution once a month, allowing the respondents to select the most suitable answers for each option according to their actual situation and feelings. This research questionnaire was approved by the Research Ethics Committee of National Taiwan University (NTU-REC No. 202103ES009) and has been classified in accordance with the Research Ethics Code. The survey was conducted anonymously with a total of 455 home care workers, and the content of the answers was kept confidential to ensure the privacy of individuals and institutions. The data collected is for academic analysis purposes only. After defects and consolidation were checked, a total of 442 valid questionnaires remained, for a recovery rate of 97%. The sample size was sufficient and representative. Multiple regression analysis, hierarchical regression analysis and structural equation modeling (SEM) were adopted to analyze the relationships among the variables, home care workers' transformational leadership, job satisfaction, work engagement and OCB and their potential influence on employee loyalty.

Research results

This study descriptively analyzed the sample data of 442 valid questionnaires to understand the information collected from the home care workers at the selected institutions. The basic personal information included seven variables: gender, age, education, marital status, work experience, service seniority and part-time/full-time work. The research results of descriptive statistical analysis are shown in Table 1.

The respondents were mostly female (392), accounting for 88.7% of the total sample; the 49 males comprised only 11.1% of the sample. This difference illustrates the considerable gender gap among home care workers, who are predominantly female. In terms of age, 9 respondents (2.3% of the total) were aged 20–30, 27 (6.1%) were aged 31–40, 106 (24%) were aged 41–50, 168

(38%) were aged 51–60, and 132 (29.9%) were over the age of 60. Most home care workers were between 51 and 60 years old, with an average age of 54.33 years old, which is obviously a high proportion of middle-aged workers. Most respondents (48%) had a (vocational) high school education level, showing that the majority of home care workers' education is concentrated at the high school level. Regarding respondents' overall seniority, 52 respondents (11.8% of the total) had worked in home care services for one year, 112 (25.3%) for 1–5 years, 157 (35.5%) for 5–10 years, and 121 (27.4%) for more than 10 years. The respondents' average seniority in home care services was 7.86 years, showing that most respondents had provided home care services for between 5 and 10 years. Regarding respondents' total seniority in their current job, 68 respondents (15.4% of the total) had worked in their current job for less than one year, 122 (27.6%) for 1–5 years, 153 (34.4%) for 5–10 years, and 99 (22.4%) for more than 10 years. The respondents' average seniority in their current job was 7.01 years, showing that the majority of respondents had less than 10 years of seniority at their current institution. The number of full-time respondents was 418, accounting for 94.6% of the total, so home care workers still primarily hold full-time jobs in Taiwan.

Table 1 displays the analysis of variance results, showing that home care workers of different ages ($F = 12.848, p < 0.001$) and education levels ($F = 2.902, p < 0.05$) showed significant variances in employee loyalty; home care workers with different seniority levels in home care services ($F = 5.653, p < 0.001$) and in their current job ($F = 6.824, p < 0.001$) also showed significant variances in employee loyalty. The other variables (gender, marital status, and full-time/part-time status) showed no significant variance, indicating no evidence that home care workers' employee loyalty varies by gender, marital status, and full-time/part-time employment status.

Female home care workers comprised the majority of the sample. This result may be explained by the characteristics of home care services, as gender role norms assert that women are better at providing caregiver support than men, and women are most likely to assume the caregiver role (Reczek and Umberson, 2016). As a result, the home care workers in this sample were disproportionately female, similar to previous studies (Morris, 2009; Berta et al., 2018). Even so, this study found no significant differences by gender in home care workers' perceptions of job satisfaction, transformational leadership, work engagement, OCB, and employee loyalty. Participants' age was concentrated in the 51–60 age range, with an average of 54.33 years old, which was consistent with Sayin et al. (2019). Former studies have also pointed out that most elder care workers are over the age of 45, and for women who are older and have passed the child-rearing period, are in good physical health, and wish to continue working, home care work may be a better job choice at this stage (Butler, 2013). In addition, the sample showed that the majority of home care workers had a (vocational) high school education level, were married, and were employed full-time, which was also consistent with past research (Cheng et al., 2019). Most participants had 5–10 years of overall seniority in home care service work, with an average of 7.86 years, and their seniority in their current job was between 5 and 10 years, with an average of 7.01 years; these results are similar to other research on the home care workers labor force (Jang et al., 2017).

Subsequently, this study conducted two-tailed Pearson correlation coefficients analysis to test the correlations among home care workers' perception of job satisfaction, transformational leadership, work engagement, and OCB and employee loyalty. The results are summarized in Table 2. Pearson correlation analysis showed positive correlations among job satisfaction, work engagement, OCB, transformational leadership and

Table 2 The results of correlation analysis.

	WE	JS	OCB	TL	EL
WE	1	^a 0.411**	^a 0.433**	^a 0.531**	^a 0.578**
JS	^b 0.370**	1	^a 0.512**	^a 0.415**	^a 0.523**
OCB	^b 0.413**	^b 0.483**	1	^a 0.518**	^a 0.694**
TL	^b 0.497**	^b 0.380**	^b 0.482**	1	^a 0.630**
EL	^b 0.583**	^b 0.479**	^b 0.679**	^b 0.610**	1

WE work engagement, JS job satisfaction, OCB organizational citizenship behavior, TL transformational leadership, EL employee loyalty.
 ** $p < 0.01$.
^acorrelation coefficient;
^bpartial correlation coefficient.

employee loyalty. The highest correlation coefficient was between the two variables of OCB and employee loyalty. In this study, the four variables of age, education, home care workers' seniority in home care services, and home care workers' seniority in their current job were used as control variables to perform partial correlation analysis. Even when controlling these variables, there were still positive partial correlation coefficients among job satisfaction, work engagement, OCB, transformational leadership and employee loyalty. The correlation coefficients of the independent variables showed weak correlations, indicating that there was no collinearity problem among the independent variables.

The results of multiple regression analysis are shown in Table 3. Prior to regression analysis, this study used the variance inflation factor (VIF) to determine whether there was collinearity between the variables, and all VIF values from Table 3 were less than 10, indicating that there was no collinearity problem between the independent variables. The results of the regression analysis showed a significant effect of job satisfaction on employee loyalty ($p < 0.001$) with an impact coefficient of $\beta = 0.251$, indicating that job satisfaction exerted a significant positive influence on employee loyalty and supporting H1. The more satisfied home care workers were with their jobs, the higher their employee loyalty, which is consistent with previous findings (Faul et al., 2010; Matzler and Renzl, 2006). Employees who are confident in their work can handle their work more efficiently, are more satisfied with their work, and have less intention to leave (Butler et al., 2014).

The effect of work engagement on employee loyalty was significant ($p < 0.05$) with an impact coefficient of $\beta = 0.092$, indicating that work engagement exerted a significant positive influence on employee loyalty and supporting H2. The greater the home care workers' perceptions of work engagement were, the higher their employee loyalty, which is consistent with previous studies (Agyemang and Ofei, 2013; Geldenhuys et al., 2014). When employees find their work highly meaningful, they will show more active and engaged behaviors and higher loyalty to the organization. The correlation analysis also showed a high correlation between work engagement and OCB, the same results as in Ariani (2013)'s study. The employees studied had a high degree of work engagement, indicating their responsible attitude towards work.

The effect of OCB on employee loyalty was also significant ($p < 0.001$), with an impact coefficient of $\beta = 0.400$, indicating that OCB exerted a significant positive influence on employee loyalty and supporting H3. Home care workers with higher perceptions of OCB also demonstrated higher employee loyalty, which is consistent with previous studies (Chu and Hsu, 2011; Kazempour and Mohd Amin, 2012). Of the four independent variables, OCB had the highest impact coefficient with employee loyalty, meaning that home care workers' employee loyalty is principally affected by OCB. This result might be because OCB

Table 3 The results of multiple regression analysis.

	β (SE)	Adjusted β	t-value	p-value	VIF
WE	0.083 (0.033)	0.092	2.499	0.013*	1.539
JS	0.208 (0.031)	0.251	6.815	0.000***	1.551
OCB	0.408 (0.039)	0.400	10.509	0.000***	1.662
TL	0.222 (0.034)	0.245	6.485	0.000***	1.638
Age	0.056 (0.018)	0.112	3.147	0.002**	1.440
Education	0.029 (0.015)	0.060	1.906	0.057	1.142
Seniority of home care	0.008 (0.033)	0.017	0.248	0.805	5.160
Seniority of current job	-0.012 (0.032)	-0.025	-0.368	0.713	5.079
R ² (%)	66.3				
Adjusted R ² (%)	65.6				
F-value	94.777***				

SE standard error, WE work engagement, JS job satisfaction, OCB organizational citizenship behavior, TL transformational leadership.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

concerns the ethics and sense of mission required by health care service providers, and their high degree of selflessness and the behavior of caring for others may lead home care workers to feel a sense of belonging to the organization as expressed through OCB (Mahooti et al., 2018). Moreover, OCB also creates a stronger sense of bonding between colleagues (Kazempour and Mohd Amin, 2012), which also provides the needed social support for home care workers, who are always working alone (Westerberg and Tafvelin, 2014).

The effect of transformational leadership on employee loyalty was significant ($p < 0.001$), with an impact coefficient of $\beta = 0.245$, indicating that transformational leadership exerted a significant positive influence on employee loyalty and supporting H4. Home care workers' supervisors are responsible for scheduling home health aides for patient visitations and work assignments and for monitoring the quality of care performed by home care workers. Although home care workers may not meet with their supervisors often, supervisors nonetheless play an important supporting role as home care workers usually take care of patients alone without any other coworkers, and their supervisors might become their only contact when they need support. Through supervisors' transformational leadership, home care workers can feel trusted and recognized, which will enhance their autonomy and loyalty to the organization. This result is consistent with past literature research (Danso et al., 2020). Therefore, the leadership style of the home care workers' supervisor is directly related to talent retention. The more the home care workers' supervisor adopts transformational leadership, the greater the home care workers' loyalty to the organization.

Regarding the control variables, the results showed a significant effect of age on employee loyalty ($p < 0.01$), with an impact coefficient of $\beta = 0.112$, indicating that age exerted a significant positive influence on employee loyalty. That is, the older the home care workers were, the higher their loyalty to the organization. In contrast, the results for home care workers' education level, seniority in home care and seniority in their current job showed no significant effect on employee loyalty. Published studies have also found that older workers with lower educational attainment have higher employee loyalty to institutions (Butler et al., 2014; Stone et al., 2017; Jang et al., 2017), although others have found no significant effect of age and educational attainment on employee loyalty (Singh and Rangnekar, 2019). The analysis of variance revealed that there were significant differences in home care workers' employee loyalty by age, education, seniority in home care and seniority in their current job; however, the multiple regression analysis found a significant effect on employee loyalty only for age. As mentioned in previous research, the independent work environment of home care workers is more

suitable for older people, who may prefer to work in an environment where they enjoy autonomy, control their own schedules, and are not bound by their direct supervisor (Faul et al., 2010). Another possible explanation is that older female home care workers might have greater family responsibility and thus prefer to avoid uncertainty in their work life, giving them greater motivation to be loyal to the organization. In addition, there was no statistically significant correlation between seniority in home care services and employee loyalty, which was the same result as in Singh and Rangnekar (2019). There was also no statistically significant correlation between seniority in current job and employee loyalty, which was the same result as in Agyemang and Ofei (2013). These results indicate that there was insufficient evidence to verify whether home care workers' working experience could influence their employee loyalty.

As shown in Table 3, the adjusted coefficient of determination (R^2) of the multiple regression model was 0.656, indicating that the four independent variables can explain 65.6% of the variance of the dependent variable, indicating that the multiple regression model was highly explanatory. The influences of the four independent variables of job satisfaction, transformational leadership, work engagement and OCB on employee loyalty were all positive, with the greatest being that of OCB, followed by job satisfaction and then transformational leadership. The F -value of the regression model was 94.777, significant at $p < 0.001$, which also indicated that the four independent variables significantly affected the dependent variable.

This study conducted three hierarchical regression models to test mediation effects among the variables based on the JD-R model, the results of which are shown in Table 4. Transformational leadership was regarded as the job resource provided by long-term care institutions, and employee loyalty was defined as work willingness or performance. The three employee motivations of work engagement, job satisfaction and OCB were employed as the three mediators for these hierarchical regression models. These results not only suggested a direct positive effect of transformational leadership on employee loyalty but also a partial mediating effect of work engagement, job satisfaction and OCB on employee loyalty, thereby supporting H5. Transformational leadership contributed to an increase in employee loyalty by helping home care workers feel satisfied and engaged with their job, supporting their development of workplace OCB, and motivating them to be loyal to the organization.

Since work engagement, job satisfaction and OCB have partial mediation effects, this study further verifies whether the mediation effects were significant by Bootstrap method ($N = 2000$) on SEM. The three SEM models were visualized in Fig. 1 and the results of mediation effects were displayed in Table 5. In Fig. 1,

Table 4 Results of hierarchical regression analysis.

Model 1	Dependent variable							
	WE				EL			
	β	t-value	β	t-value	β	t-value	β	t-value
TL	0.415	9.135	0.630	17.034			0.503	12.711
WE					0.523	12.263	0.314	7.924
F-value	83.441	290.157	290.157	150.375				
R ² (%)	0.173	0.397	0.397	0.273				
Adjusted R ² (%)	0.171	0.396	0.396	0.271				
p-value	0.000***	0.000***	0.000***	0.000***				

Model 2	Dependent variable							
	JS				EL			
	β	t-value	β	t-value	β	t-value	β	t-value
TL	0.530	13.105	0.630	17.034			0.450	11.059
JS					0.577	14.810	0.339	8.321
F-value	171.734	290.157	290.157	219.326				
R ² (%)	0.281	0.397	0.397	0.333				
Adjusted R ² (%)	0.280	0.396	0.396	0.332				
p-value	0.000***	0.000***	0.000***	0.000***				

Model 3	Dependent variable							
	OCB				EL			
	β	t-value	β	t-value	β	t-value	β	t-value
TL	0.521	12.782	0.630	17.034			0.376	10.394
OCB					0.693	20.143	0.497	13.764
F-value	163.387	290.157	405.734	306.346				
R ²	0.271	0.397	0.480	0.583				
Adjusted R ² (%)	0.270	0.396	0.479	0.581				
p-value	0.000***	0.000***	0.000***	0.000***				

WE work engagement, JS job satisfaction, OCB organizational citizenship behavior, TL transformational leadership, EL employee loyalty. The bold values show the direct effects and indirect effects from TL to EL.
 ***p < 0.001.

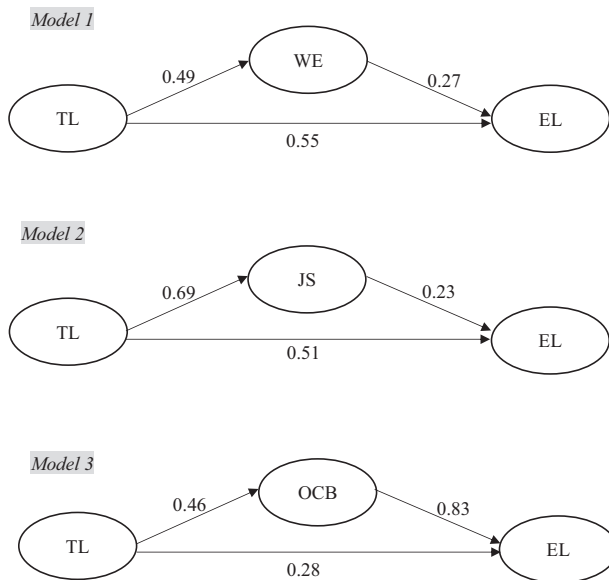


Fig. 1 The models of SEM. Note: WE work engagement, JS job satisfaction, OCB organizational citizenship behavior, TL transformational leadership, EL employee loyalty.

the three models tested separately three mediation effects between transformational leadership and employee loyalty from the three mediators, work engagement, job satisfaction and OCB. The path coefficient of the three models were also shown in Fig. 1.

The results showed that mediation effects of the three mediators, work engagement, job satisfaction and OCB, exist between

Table 5 Results of SEM for the mediation effect between TL and EL.					
Mediator	Indirect effect	Direct effect	Total effect	p-value	VAF
WE	0.13	0.55	0.68	p < 0.000	19.39%
JS	0.16	0.51	0.67	p < 0.000	23.73%
OCB	0.38	0.28	0.66	p < 0.000	57.69%

WE work engagement, JS job satisfaction, OCB organizational citizenship behavior, TL transformational leadership, EL employee loyalty.

transformational leadership and home care workers' loyalty ($p < 0.000$). The indirect effect is the multiplication of the two path coefficients of the independent variable to the mediator and the mediator to the dependent variable. The path coefficient of transformational leadership to work engagement was 0.49 and the path coefficient of work engagement to employee loyalty was 0.27, so the indirect effect was 0.13. The direct effect was the path coefficient of transformational leadership to employee loyalty, which was 0.55, and the total effect was the indirect effect plus the direct effect, and its value was 0.68. The Variance Accounted For (VAF) is the indirect effect divided by the total effect. The explanatory variation ratio of work engagement's mediation effect on the relationship between transformational leadership and employee loyalty was $0.1323/0.6823 = 0.1939$, that is, VAF was 19.39%. Similarly, the path coefficient of transformational leadership to job satisfaction was 0.69, and the path coefficient of job satisfaction to employee loyalty was 0.23. The indirect effect was 0.16, the direct effect was 0.51, and the total effect was 0.67. The

VAF value of job satisfaction's mediation effect on the relationship between transformational leadership and employee loyalty was 23.73%. The path coefficient of transformational leadership to OCB was 0.46, and the path coefficient of OCB to employee loyalty was 0.83. The indirect effect is 0.38, the direct effect is 0.28, and the total effect is 0.66. The VAF value of OCB's mediation effect on the relationship between transformational leadership and employee loyalty was 57.69%.

Regarding the VAF of the three mediators, this study found that home care workers' OCB had the strongest mediation effect, followed by job satisfaction and work engagement. According to the standard proposed by published research, VAF greater than 80% means full mediation, between 20–80% is partial mediation, and less than 20% indicates no mediation effect (Hair et al., 2016). As a result, OCB and job satisfaction had partial mediation effects between transformational leadership and home care workers' loyalty, and the VAF value of work engagement was slightly under the proposed standard (20%), that is H5 was partially supported.

Conclusion

This study confirmed through empirical data the significant positive impacts of transformational leadership, job satisfaction, work engagement and OCB on home care workers' employee loyalty and the partial mediating effect of work engagement, job satisfaction and OCB between transformational leadership and employee loyalty.

Through the results of the multiple regression analysis, this study found the four significantly positively impact factors of home care workers' loyalty, which were transformational leadership, job satisfaction, work engagement and OCB. The adjusted R^2 of the regression model was 65.6%, it means this regression model has high explanatory power. In the long-term care policy promoted by the Taiwan government, strengthening the prioritized development of home-based long-term care services has become an important measure based on the principle of local ageing. The subsequent improvement of care quality and service system efficiency are important topics, given that quality orientation has been listed as an indicator of long-term care policy progress. High perceptions of transformational leadership from supervisors, work engagement, job satisfaction, OCB and employee loyalty among home care service workers are related to the quality of the services they provide (Nielsen et al., 2009; Westerberg and Tafvelin, 2014; Stone et al., 2017). The quality of home care services affects the safety of the elderly and can help them maintain a good quality of life and reduce medical costs. Hence, an effective and sustained strategy must be developed to stabilize the workforce prior to the implementation of a service quality improvement program. It is recommended to start by training home care workers in professional skills including basic care knowledge related to various diseases, rather than simply the tasks of caring, cleaning, and assisting with personal hygiene. Give home care workers the opportunity to learn and grow, help them improve their professional self-efficacy, and their relative sense of personal achievement will increase. When the role of home care workers is professionally affirmed and dignified, they can effectively re-examine the value of the individual and the meaning of their work, resulting in higher identification and greater engagement with the organization.

According to the concepts of JD-R model, this study found empirical evidences to prove the mediation effects of employee motivations (work engagement, job satisfaction and OCB) between job resource (transformational leadership) and work willingness or performance (employee loyalty). That is, transformational leadership not only directly positively affected home care workers'

loyalty, but also has indirect influences through the mediators. It could be suggested that managers of home care institutions should adopt a transformational leadership style, such as establishing vision, fueling the engine of the workplace, solving problems and providing individual support, which will help home care workers feel challenged and satisfied by their work, thereby stimulating their personal potential and their devotion to their work. As high organizational performance is linked to employees' high work engagement, it is also suggested that home care institutions could actively encourage employees to participate in educational training courses to strengthen their awareness of work.

This study further found that home care workers' OCB had the strongest mediation effect between transformational leadership and employee loyalty. The OCB displayed by home care workers is a source of organizational performance creation, consolidating the employee loyalty to the organization and offering organizational advantages. The results of this study could be provided to home care service organizations when recruiting new employees. In addition to the selection of candidates with a high degree of trust in the organization, employees who show a high degree of OCB within the organization can also be supported and encouraged to implement and cultivate good behavior among employees, ultimately improving overall employee loyalty to the organization. Workers can develop OCB that is beneficial to the organization, which will motivate employee loyalty to the organization and willingness to continue to provide services. Such an environment will also help attract more young people to join the ranks of the home care profession, which will help solve fundamental short-staffing problems.

This study employed a rigorous and detailed research process that included data collection, a literature review, determination of structure and hypothesis formation, questionnaire distribution, and data analysis. However, due to manpower and time constraints, information was collected only from home care workers at long-term care service institutions in Taiwan and not more widely from other regions. Due to the different sizes of long-term care institutions in different countries and the differences in welfare systems, the extrapolation of the research results might be affected. It is suggested that future research on related topics could be expanded to include more in-depth comparative discussions to increase the generalizability of the research. To avoid an overly complex research structure, this study only used job satisfaction, work engagement, OCB and transformational leadership as independent variables, meaning that it may not have considered all the factors impacting employee loyalty at the same time. It is suggested that future studies could include more factors that affect home care workers' employee loyalty, such as personality, work motivation, and incentive systems, to explore employee loyalty in more depth.

Data availability

The data that support the finding of this study are available from the corresponding author upon reasonable requests. The data are not publicly available due to privacy or ethical restrictions.

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Author contributions

Conceptualization, formal analysis, funding acquisition, investigation, project administration, supervision, validation, visualization, writing—original, draft, WH; Formal analysis, data curation, resources, writing—review & editing, Y-CC; Formal analysis, methodology, software, writing—review & editing, C-HY. All authors have read and agreed to the published version of the manuscript.

Competing interests

The authors declare no competing interests.

Ethics approval

The questionnaire for this study was approved by the Institutional Review Board. (IRB No.: NTU-REC No. 202103ES009).

Informed consent

Participant consent was approved by the Institutional Review Board (IRB No.: NTU-REC No. 202103ES009). The participants were informed during the recruitment process that their participation was voluntary and that all information was treated with confidentiality.

Consent for publication

Not applicable.

Additional information

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