

Associations between Affiliate Stigma and Quality of Life among Caregivers of Individuals with Dementia: Mediated Roles of Caregiving Burden and Psychological Distress

Abstract

Introduction: The associations between affiliate stigma, caregiving burden, psychological distress, and quality of life (QoL) among family caregivers of people living with dementia (PwD) have been demonstrated in the literature. However, there is a dearth of literature regarding how these factors could form a psychological mechanism. The present study proposed a theoretical model to portray the relationships between these factors. **Methods:** Utilizing convenience sampling and cross-sectional study design, 275 family caregivers (145 females [52.7%]; mean age = 52.71 years) were recruited from a general hospital from October 2013 to September 2014. Each participant completed the following instruments in a quiet room in the general hospital without disturbance: Caregiver Burden Inventory, World Health Organization QoL Questionnaire-Brief, Affiliate Stigma Scale, and Beck Anxiety Inventory alongside the Taiwan Depression Questionnaire (assessing psychological distress). Structural equation modeling was used to examine the proposed theoretical model. **Results:** Affiliate stigma (standardized coefficient [β] = -0.338 ; $P = 0.011$) and psychological distress ($\beta = -0.538$; $P < 0.001$) were negatively associated with QoL, caregiving burden was positively associated with psychological distress ($\beta = 0.818$; $P < 0.001$), and affiliate stigma was positively associated with caregiving burden ($\beta = 0.793$; $P < 0.001$). Moreover, a significant mediated effect was observed between affiliate stigma and QoL via sequential mediators of caregiving burden and psychological distress (unstandardized coefficient = -1.17 and 95% confidence interval = -1.88 , -0.46). **Conclusion:** Affiliate stigma, caregiving burden, and psychological distress are key factors contributing to low QoL among family caregivers of PwD. Health-care providers should design programs to help reduce affiliate stigma, caregiving burden, and psychological distress for family caregivers of PwD to facilitate their QoL.

Keywords: Burden, caregiver, dementia, psychological distress, quality of life, stigma

Introduction

Dementia is a growing neurocognitive disorder and often jeopardizes older people's health and interrupts their healthy aging.^[1] There were around 50 million people living with dementia (PwD) worldwide in 2017, and the number of PwD is rapidly growing with approximately 10 million new cases annually.^[2] In Taiwan, a national survey reported an age-sex-adjusted prevalence of dementia to be 8.13 per 102 individuals (95% confidence interval [CI], 7.61–8.66) among those aged 65 years and older.^[3] Currently, dementia care relies heavily on unpaid family caregivers (aka informal caregivers), who substantially assist PwD in their functional daily activities and carry out health professionals' prescriptions

or treatment plans.^[4,5] In other words, quality caregiving for PwD is based on the good health of PwD's family caregivers because they are close allies of health-care providers in taking care of PwD. Therefore,

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Received: 22 March, 2023.

Revised: 07 May, 2023.

Accepted: 12 May, 2023.

Published: 30 May, 2023

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Access this article online

Website: www.healthandbehavior.com

DOI: 10.4103/shb.shb_67_23

Quick Response Code:



How to cite this article: Hu YL, Chang CC, Lee CH, Liu CH, Chen YJ, Su JA, et al. Associations between affiliate stigma and quality of life among caregivers of individuals with dementia: Mediated roles of caregiving burden and psychological distress. Asian J Soc Health Behav 2023;6:64-71.

the health of the family caregivers is important because family caregivers cannot function properly and take good care of PwD if they have health issues. Accordingly, it is important for health-care providers to evaluate quality of life (QoL) – an important index of subjective overall health for individuals – and its potential factors among family caregivers of PwD.^[6]

The literature shows that three psychological factors are important for QoL among family caregivers (such as the spouse, siblings, and adult children) who take care of PwD.^[7] They are affiliate stigma, psychological distress, and caregiving burden. Regarding caregiving burden (i.e., *“the pressure that caregivers typically experience from their caregiving duties”*^[8]), family caregivers of PwD often experience increased caregiving burden because they have to take care of their beloved family member with dementia and tolerate their dementia symptoms.^[9,10] More specifically, dementia symptoms (e.g., physical disturbance, cognitive impairment, and functional loss) require family caregivers to continually provide intense and long-term care.^[11] If the caregiving burden remains high, both PwD and their family caregivers are at risk of poor health, which may contribute to poor QoL among family caregivers.^[12–14] Therefore, reducing caregiver burden should be considered one of the priorities in dementia care.

Apart from causing poor QoL, caregiving burden may also result in psychological distress.^[4,15,16] Cumulative evidence has shown that caregivers of PwD have a higher risk of developing anxiety and depressive symptoms.^[17] A longitudinal study found that caregiving burden predicts depressive symptoms within 5 years.^[18] Similarly, 30%–60% of caregivers reported anxiety across a variety of countries in cross-sectional and longitudinal studies.^[10,17] Additionally, higher levels of caregiving burden and associated psychological distress are both strongly associated with reduced QoL. Therefore, caregiving burden could lead to reduced QoL for family caregivers of PwD through increased psychological distress.

Caregiving burden and psychological distress of family caregivers are likely to be associated with affiliate stigma, a type of stigma with features of courtesy stigma (i.e., having stigma due to the connection, association, or relationship with a stigmatized group), and self-stigma (i.e., endorsing and internalizing stigma within oneself).^[19–22] However, to the best of the present authors’ knowledge, how affiliate stigma associates with caregiving burden is rarely discussed in the PwD literature. It is only recently that stigma among caregivers of PwD has gained growing attention, and evidence shows that stigma alone contributes to caregiver burden.^[23] Moreover, affiliate stigma has been found to be associated with caregiving burden and psychological distress among caregivers of PwD.^[24] However, to the best of the present authors’ knowledge, no psychological mechanism has been proposed to examine the relationships

between affiliate stigma, caregiving burden, psychological distress, and QoL among family caregivers of PwD. Therefore, the present study proposed a theoretical model with the considerations of the small empirical evidence base regarding the associations between affiliate stigma, caregiving burden, psychological distress, and QoL.

The proposed theoretical model [Figure 1] is with the following hypotheses (H_s) among family caregivers of PwD. H_1 : affiliate stigma is negatively associated with QoL, H_2 : caregiving burden is positively associated with psychological distress, H_3 : psychological distress is negatively associated with QoL, H_4 : affiliate stigma is positively associated with psychological distress, H_5 : caregiving burden is positively associated with psychological distress, and H_6 : affiliate stigma is positively associated with caregiving burden. Apart from these H_s concerning the direct associations between every two studied variables, caregiving burden and psychological distress were also proposed to be mediators in the association between affiliate stigma and QoL. This study objective was to test the proposed theoretical model and seek clarification of how affiliated stigma is related to caregiving burden, psychological distress, and QoL.

Methods

Participants and procedure

The present study adopted a secondary data analysis using data collected in a prior methodological study.^[12] The Institutional Review Board of Chang Gung Memorial Hospital (IRB no.: 102-3378B) approved the study protocol, and the data were collected from October 2013 to September 2014. The participants’ willingness to participate in the present study was verified using written informed consent. The study purpose was clearly explained to all the participants in detail.

Eligible participants were the caregivers of outpatients with dementia. More specifically, all the caregivers were recruited from a general hospital. That is, several psychiatrists first identified eligible participants and informed them of this study. Then, the psychiatrists referred those who were interested in the study to a research assistant to provide detailed information. After the participant signed a written informed consent, the research assistant helped the participant complete the questionnaires used in the present study in a quiet room in the hospital without disturbance. Apart from the criterion of taking care of at least one family member diagnosed with dementia, other inclusion criteria for eligibility included being (1) aged over 20 years, (2) able to understand the study purpose and related questionnaires, and (3) able to understand Mandarin or Taiwanese Chinese in either oral or written form. In addition, the care recipients’ diagnosis of dementia was based on the Diagnostic and Statistical Manual of Mental Disorders-IV-TR.^[25] The only exclusion

criterion was if the caregivers self-reported any diagnosis of mental illness.

The present sample size is sufficient because a *post hoc* calculation of the power was 0.98. More specifically, the power was calculated using the following parameters: (i) the statistical analysis of structural equation modeling (SEM) (please see statistical analysis for detailed information), (ii) a degree of freedom at 91, (iii) a sample size of 275, (iv) a null root mean square residual error of approximation (RMSEA) at 0, and (v) an alternative RMSEA at 0.05.

Measures

Caregiver Burden Inventory

The Caregiver Burden Inventory (CBI) used in the present study was the Taiwanese version which has satisfactory psychometric properties.^[26] The Taiwanese CBI version assesses caregiver burden using five domains comprising time-dependent burden (five items), developmental burden (five items), physical burden (four items), social burden (four items), and emotional burden (six items). Therefore, the Taiwanese CBI version contains 24 items. All the CBI items are rated on a five-point Likert scale and then converted into a 1–5 scale for each domain, where a higher score indicates a greater level of caregiving burden.^[27] The internal consistency of the CBI in the present study was good ($\alpha = 0.922$).

World Health Organization Quality of Life Questionnaire-Brief

The World Health Organization Quality of Life Questionnaire-Brief (WHOQOL-BREF) used in the present study was the Taiwanese version which has satisfactory psychometric properties.^[28] The Taiwanese WHOQOL-BREF assesses four QoL domains comprising physical QoL (seven items), psychological QoL (six items), social QoL (four items), and environmental QoL (nine items). Moreover, two general items were not included in any domain in the Taiwanese WHOQOL-BREF. Therefore, the Taiwanese WHOQOL-BREF contains 28 items, and two items are culturally specific (one item embedded in the social domain assessing respect and another item embedded in the environmental domain assessing eating). All the WHOQOL-BREF items are rated on a five-point Likert scale and then converted into a 0–20 scale for each domain, where a higher score indicates a better level of QoL.^[29–32] The internal consistency of the WHOQOL-BREF in the present study was good ($\alpha = 0.873$).

Affiliate Stigma Scale

The Affiliate Stigma Scale (ASS) used in the present study was the Taiwanese version which has satisfactory psychometric properties.^[12,20] The Taiwanese ASS assesses affiliate stigma using three domains of affect (seven items), behavior (eight items), and cognitive (seven items).

Therefore, the Taiwanese ASS contains 22 items. All the ASS items are rated on a four-point Likert scale and then converted into a 1–4 scale for each domain, where a higher score indicates a greater level of affiliate stigma.^[13,22] The internal consistency of the ASS in the present study was excellent ($\alpha = 0.930$).

Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI) used in the present study was the Taiwanese version which has satisfactory psychometric properties.^[33] The Taiwanese BAI assesses anxiety as a unidimensional domain with 21 items. All the BAI items are rated on a four-point Likert scale and then converted into a 0–63 scale for the entire BAI, where a higher score indicates a greater level of anxiety.^[34] The internal consistency of the BAI in the present study was excellent ($\alpha = 0.932$).

Taiwan Depression Questionnaire

The Taiwan Depression Questionnaire (TDQ) was developed using Taiwanese populations. The TDQ has satisfactory psychometric properties and assesses depression using a unidimensional domain that has 18 items.^[35] All the TDQ items are rated on a four-point Likert scale and then converted into a 0–54 scale for the entire TDQ, where a higher score indicates a greater level of depression.^[35] The internal consistency of the TDQ in the present study was excellent ($\alpha = 0.951$).

Statistical analysis

Descriptive statistics were used to understand the characteristics of the participants and their care recipients. Then, Pearson correlations were applied to understand the magnitude of the associations between studied constructs, where Pearson's r is considered small at 0.1, moderate at 0.3, and large at 0.5.^[36]

SEM with the use of maximum likelihood estimator was then carried out to examine the proposed theoretical model. In the model, overall QoL was constructed using the four WHOQOL-BREF domains (physical QoL, psychological QoL, social QoL, and environment QoL); affiliate stigma was constructed using the three ASS domains (affect, behavior, and cognitive); caregiving burden was constructed using the five CBI domains (time-dependent burden, developmental burden, physical burden, social burden, and emotional burden); and psychological distress was constructed using TDQ and BAI. The subdomain scores (WHOQOL-BREF, ASS, and CBI) and the entire instrument scores (TDQ and BAI) were used to fulfill the principle of parsimony in the SEM. The following fit indices with recommended cutoffs were used to examine whether the proposed model was supported: comparative fit index (CFI) >0.9, Tucker–Lewis index (TLI) >0.9, RMSEA < 0.08, and standardized root mean square residual (SRMR) <0.08.^[37,38] Moreover, mediated effects of

caregiving burden and psychological distress were examined using bootstrapping method with 1000 resamples. When the 95% CI calculated using bootstrap standard error does not cover 0, the mediated effect is proposed to be significant.^[39] The data were analyzed using R software (R Core Team) with lavaan package for the SEM and IBM SPSS 24.0 (Armonk, NY: IBM Corp.) for all other analyses.^[40]

Results

On average, the care recipients (175 females; 63.6%) were aged 79.21 years (standard deviation [SD] = 6.71) and the caregivers (145 females; 52.7%) were aged 52.71 years (SD = 12.17). The average caregiving time of the participants was 2.50 years (SD = 2.50). Most of the caregivers were the children of the care recipients ($n = 170$; 61.7%), were living with the care recipients ($n = 195$; 70.9%), were the primary caregiver ($n = 230$; 83.6%), and had a helper ($n = 210$; 76.4%). Information of the QoL, affiliate stigma, caregiving burden, and psychological distress for the caregivers is presented in Table 1.

Table 2 illustrates the correlations and internal consistency of the studied constructs. All the constructs had acceptable internal consistency, except for slightly low internal

consistency in the social burden construct of the CBI. In addition, all the correlations between the studied constructs were significant ($P < 0.001$), with most of the magnitudes being moderate or above (i.e., $r > 0.3$). Moreover, all the directions of the studied constructs were those expected. More specifically, QoL constructs were negatively associated with all the other constructs, and all the other constructs were mutually and positively associated.

Apart from the significant χ^2 ($P < 0.001$), the fit indices of the proposed model were satisfactory: CFI = 0.942, TLI = 0.925, RMSEA = 0.079, and SRMR = 0.056 [Figure 2]. Moreover, significant path coefficients were shown between QoL and affiliate stigma (standardized coefficient [β] = -0.338 ; $P = 0.011$), QoL and psychological distress ($\beta = -0.538$; $P < 0.001$), psychological distress and caregiving burden ($\beta = 0.818$; $P < 0.001$), and caregiving burden and affiliate stigma ($\beta = 0.793$; $P < 0.001$). However, path coefficients were not significant between QoL and caregiving burden ($\beta = -0.002$; $P = 0.99$) and between psychological distress and affiliate stigma ($\beta = -0.075$; $P = 0.62$). Regarding the mediated effects, significance was found when both caregiving burden and psychological distress were sequential mediators (i.e., affiliate stigma was indirectly associated with QoL via caregiving burden first and psychological distress second): unstandardized coefficient = -1.17 and 95% CI = -1.88 , -0.46 . The mediated effects were nonsignificant when there was only one mediator in the association between affiliate stigma and QoL: unstandardized coefficient = -0.005 and 95% CI = -0.92 , 0.91 for caregiving burden and unstandardized coefficient = 0.14 and 95% CI = -0.43 , 0.70 for psychological distress. In summary, the present SEM findings fully supported H_1 , H_3 , H_5 , and H_6 but did not support H_2 and H_4 . The hypothesis regarding mediated effects was partially supported.

Discussion

Using data from family caregivers of PwD, a theoretical model was tested to see if affiliate stigma served as the antecedent, with caregiving burden and psychological distress being sequential mediators for the caregivers' QoL. Almost all H_s proposed in the theoretical model were supported by the present study's findings, with the exceptions of the following direct and indirect associations: direct association between affiliate stigma and psychological distress, direct association between caregiving burden and QoL, indirect association from affiliate stigma to QoL via caregiving burden only, and indirect association from affiliate stigma to QoL via psychological distress only.

Consistent with prior findings on family caregivers of PwD or those of people with mental illness,^[12-14,24] the present study showed that affiliate stigma of family caregivers who take care of PwD is associated with their caregiving burden, psychological distress, and QoL. Furthermore, consistent with prior findings on family caregivers of PwD,^[4,15,16] the

Table 1: Characteristics of participants and their care recipients ($n=275$)

Caregiver	Mean (SD) or n (%)
Age (year)	52.71 (12.17)
Caregiving time (year)	2.50 (2.50)
Gender (female)	145 (52.7)
Relationship with care recipients	
Spouse	37 (13.5)
Children	170 (61.7)
Others	68 (24.8)
Living together (yes)	195 (70.9)
Primary caregiver (yes)	230 (83.6)
Having helper (yes)	210 (76.4)
Physical QOL	14.18 (2.66)
Psychological QOL	12.78 (2.89)
Social QOL	13.66 (2.42)
Environment QOL	13.95 (2.40)
Affiliate stigma in affect domain	1.89 (0.67)
Affiliate stigma in behavior domain	1.42 (0.48)
Affiliate stigma in cognitive domain	1.54 (0.52)
Time-dependent burden	2.50 (1.17)
Developmental burden	1.80 (1.14)
Physical burden	2.11 (1.14)
Social burden	1.58 (1.02)
Emotional burden	0.75 (0.72)
Depression	12.83 (11.28)
Anxiety	8.09 (8.77)
Care recipients	
Age (year)	79.21 (6.71)
Gender (female)	175 (63.6)

QOL: Quality of life, SD: Standard deviation

Table 2: Pearson correlation matrix and internal consistency of studied constructs

	QOL				Affiliate stigma			Caregiver burden					Distress	
	Phy	Psy	Soc	Env	A	B	C	TB	DB	PB	SB	EB	Anxiety	Depression
Phy	(0.803)													
Psy	0.713	(0.818)												
Soc	0.505	0.703	(0.719)											
Env	0.659	0.747	0.672	(0.804)										
A	-0.494	-0.587	-0.462	-0.453	(0.851)									
B	-0.374	-0.484	-0.430	-0.402	0.705	(0.822)								
C	-0.446	-0.461	-0.450	-0.432	0.719	0.785	(0.857)							
TB	-0.392	-0.377	-0.279	-0.329	0.486	0.352	0.294	(0.838)						
DB	-0.484	-0.563	-0.454	-0.515	0.597	0.498	0.472	0.568	(0.837)					
PB	-0.552	-0.468	-0.310	-0.388	0.547	0.362	0.376	0.671	0.639	(0.868)				
SB	-0.347	-0.385	-0.297	-0.357	0.416	0.433	0.376	0.470	0.563	0.536	(0.684)			
EB	-0.323	-0.347	-0.338	-0.357	0.583	0.571	0.568	0.368	0.543	0.447	0.517	(0.768)		
Anxiety	-0.606	-0.561	-0.417	-0.514	0.475	0.380	0.448	0.403	0.517	0.513	0.398	0.259	(0.932)	
Depression	-0.639	-0.652	-0.448	-0.509	0.617	0.402	0.420	0.507	0.634	0.648	0.493	0.373	0.795	(0.951)

All $P < 0.001$. Internal consistency (Cronbach's α) of each construct is presented using (parentheses) in the diagonal line. QOL: Quality of life, Phy: Physical QOL, Psy: Psychological QOL, Soc: Social QOL, Env: Environment QOL, A: Affiliate stigma in affect domain, B: Affiliate stigma in behavior domain, C: Affiliate stigma in cognitive domain, TB: Time-dependent burden, DB: Developmental burden, PB: Physical burden, SB: Social burden, EB: Emotional burden

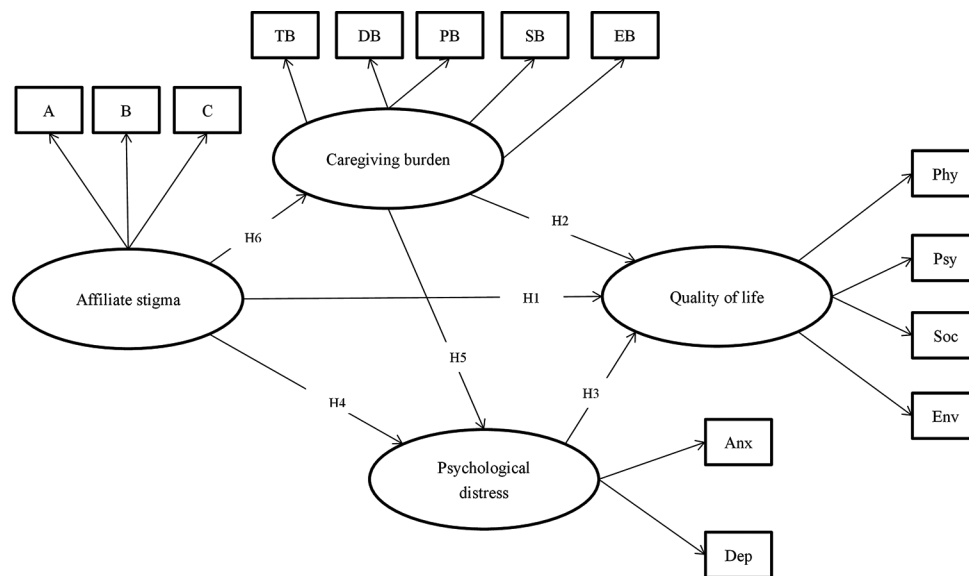


Figure 1: The proposed model in explaining quality of life for caregivers of family member with dementia. A: Affect domain, B: Behavior domain, C: Cognitive domain, TB: Time-dependent burden, DB: Developmental burden, PB: Physical burden, SB: Social burden, EB: Emotional burden, Anx: Anxiety, Dep: Depression, Phy: Physical quality of life, Psy: Psychological quality of life, Soc: Social quality of life, Env: Environment quality of life

present study concurred with the cumulative evidence in the associations between caregiving burden, psychological distress, and QoL. The present study's findings further supported the potential relationships between these psychological factors (i.e., affiliate stigma, caregiving burden, psychological distress, and QoL) via a theoretical model verified by the SEM results. More specifically, affiliate stigma could be the origins for family caregivers of PwD having reduced QoL through the increased caregiving burden and elevated psychological distress.

Affiliate stigma among family caregivers of PwD is likely to lead to negative consequences in different aspects,

including the caregivers' social life (e.g., family burden), emotions (e.g., depression), and behaviors (e.g., withdrawal from interactions and being isolation).^[41] In this regard, it is reasonable to assume that affiliate stigma may lead to increased caregiving burden and psychological distress, and such associations were supported by the present study's findings. Moreover, the present findings found that affiliate stigma was directly associated with caregiving burden but not psychological distress. Instead, the significant association between affiliate stigma and psychological distress was found to be an indirect one (i.e., affiliate stigma was associated with psychological distress via caregiving

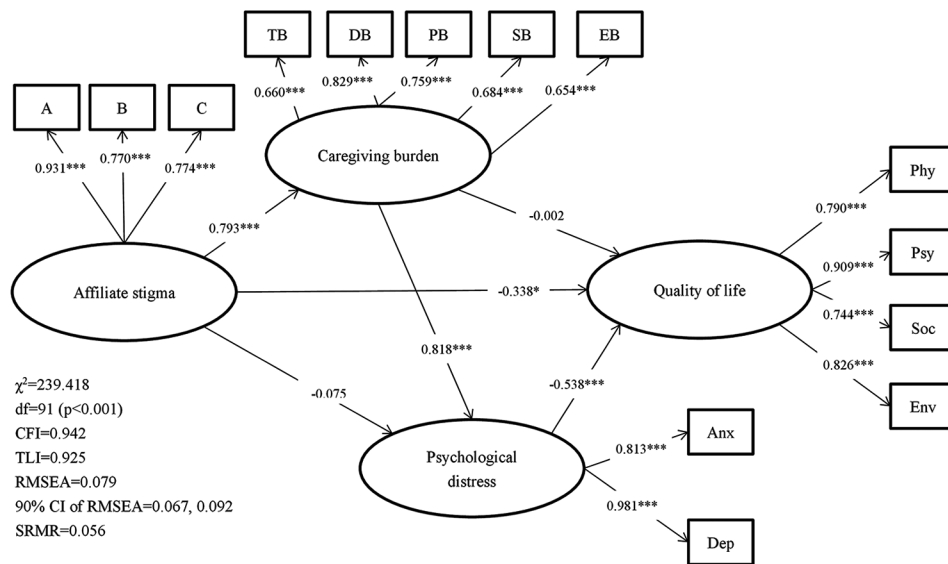


Figure 2: Standardized coefficients for the proposed model in explaining quality of life for caregivers of family member with dementia. Age and caregiving time were controlled in the model. CFI: comparative fit index, TLI: Tucker–Lewis index, RMSEA: Root mean square residual error of approximation, SRMR: Root mean square residual, WRMR: Weighted root mean square residual, A: Affect domain, B: Behavior domain, C: Cognitive domain, TB: Time-dependent burden, DB: Developmental burden, PB: Physical burden, SB: Social burden, EB: Emotional burden, Anx: Anxiety, Dep: Depression, Phy: Physical quality of life, Psy: Psychological quality of life, Soc: Social quality of life, Env: Environment quality of life

burden). This finding concurs with prior evidence showing that affiliate stigma predicts caregiving burden,^[42] and caregiving burden predicts depressive symptoms.^[18] More specifically, affiliate stigma may lead to family caregivers having heavy demands when taking care of a family member with mental illness (e.g., dementia) and lead to increased caregiving burden.^[22] When caregiving burden becomes higher, the psychological load for the family caregivers becomes heavier and subsequently leads to psychological distress.^[4,15,16]

In addition to the direct association between affiliate stigma and poor QoL, which is consistent with prior research's findings,^[12-14] the present study proposed an indirect route between affiliate stigma and QoL. The indirect route included two sequential mediators of caregiving burden and psychological distress (i.e., poor QoL is likely to be the final health consequence in the associations between affiliate stigma, caregiving burden, and psychological distress). Given that the health of caregivers of PwD is important in providing quality care to PwD and reducing the societal burden in treating PwD,^[12-14] it is important to assist family caregivers of PwD in maintaining good QoL. In this regard, the present study showed the importance of reducing affiliate stigma, caregiving burden, and psychological distress among family caregivers of PwD because the three psychological factors are important for their QoL.

Implications

Because caring PwD is a very challenging for family caregivers, these caregivers are likely to have a variety of psychosocial problems that jeopardize their health and caregiving quality. Given that family caregivers of

PwD are the primary allies of mental health clinicians in providing quality care, it is important for mental health clinicians to assist family caregivers in maintaining health. Therefore, understanding what the psychosocial threats are is important in designing effective programs that maintain caregivers' health or QoL. The present study's theoretical model provides health-care providers' information regarding important factors of QoL among family caregivers of PwD. The findings indicated that affiliate stigma could be the antecedent that triggers caregiving burden, which subsequently increases psychological distress, and finally leads to poor QoL for family caregivers of PwD. In addition to this indirect route, affiliate stigma itself might also directly associate with poor QoL. Mental health clinicians may use the findings here to design programs that help reduce affiliate stigma, caregiving burden, or psychological distress and help elevate QoL among family caregivers of PwD. In turn, the quality care for PwD may be maintained.

Limitations

There are some limitations in the present study. First and most importantly, the results should be interpreted carefully considering that the data were collected almost 10 years ago. The perspectives to stigma among PwD and their caregivers in the present study could be somewhat different from the current situation. More specifically, Taiwan's long-term care insurance system was introduced in the past decade,^[42,43] and the phenomenon studied in the present study is very likely to be different due to this insurance system. For example, the burden of family caregiving has been considerably reduced since this insurance system was launched. Apart from the insurance system, Taiwan

has made considerable progress in education and public awareness regarding care of the elderly. This might have had an impact in lowering affiliate stigma. Therefore, the results may be somewhat different if a study with the same survey items were carried out in the present day. However, the results of the present study still serve as an early-stage model for future theory development. Indeed, previous studies have used old data to generate new ideas or to verify, refute, and refine existing research.^[44,45] Second, the present study utilized a cross-sectional study design and therefore provides little evidence in determining causal relationships. Therefore, the theoretical model tested in the present study does not have strong evidence to justify the proposed directions between the studied variables, although these proposed directions appear to be supported by the extant empirical evidence. Consequently, future studies utilizing a longitudinal study design are needed to examine the proposed directions and temporal associations in the present study's theoretical model. Third, all the measures used were self-report and derived from the family caregivers. Therefore, common method variance bias or so-called single rater bias might have confounded the present study's findings. Future studies are recommended using different methods to collect evidence regarding the psychological constructs tested in the present study (e.g., using the Hamilton Depression Rating Scale via psychiatrists' observation to obtain caregivers' psychological distress to avoid such confounding bias). Fourth, the data were collected using convenience sampling within a general hospital. Therefore, the generalizability of the theoretical model tested in the present study might be weak because the present sample might be homogeneous. Future studies are therefore needed to examine whether the model can be replicated among family caregivers of PwD in other countries, cultures, or ethnic groups. Finally, given that the world is facing the COVID-19 pandemic and prior evidence shows the increased psychological distress caused by it,^[46] it is important to examine further psychosocial needs among caregivers of PwD, such as using qualitative methods.^[47]

Conclusions

The present study's findings support a theoretical model explaining the psychological mechanism of QoL among family caregivers of PwD. In the theoretical model, affiliate stigma, caregiving burden, and psychological distress are key factors contributing to low QoL among family caregivers of PwD. Moreover, caregiving burden and psychological distress were found to be sequential mediators (where caregiving burden occurs before psychological distress) in the association between affiliate stigma and QoL. Based on this theoretical model, future research should explore how other factors such as family conflicts, culture, and other financial situations could influence the mechanism of caregiver burden with

affiliate stigma. As for health-care providers, designing programs to reduce affiliate stigma, caregiving burden, and psychological distress among family caregivers of PwD could help them increase their QoL.

Acknowledgment

The authors would like to thank all the participants for their participation.

Financial support and sponsorship

This research was supported in part by (received funding from) the National Health Research Institutes (NHRI-11A1-CG-CO-04-2225-1).

Conflicts of interest

Chung-Ying Lin is the co-editor-in-chief of the Asian Journal of Social Health and Behavior; this paper went through rigorous peer review and revision.

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