

The social support, mental health, psychiatric symptoms, and functioning of persons with schizophrenia participating in peer co-delivered vocational rehabilitation: a pilot study in Taiwan

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Abstract

Background

A consensual understanding of the effect of vocational peer support (VPS) on the functioning of persons with schizophrenia still eludes researchers. There are also few VPS services found in non-Western countries. Hence, a pilot program of peer co-delivered vocational rehabilitation to support persons with schizophrenia in Taiwan was proposed and evaluated.

Methods

Six peers were trained and were willing to co-lead and assist workplace problem-solving and care skills training in an extended vocational rehabilitation program. A total of 46 persons with schizophrenia participated in such services from August 2017 to December 2018. The social support, mental health, psychiatric symptoms, and functioning of service users were assessed before and after peer co-delivered services, based on the following: Social Support Scale (SSS), Chinese Health Questionnaire-12 (CHQ-12), Brief Psychiatric Rating Scale (BPRS), Global Assessment of Function (GAF), and the Chinese version of the Social Functioning Scale (C-SFS).

Results

Most service users were middle-aged (49.1 ± 9.8), with 27 being male (58.7%). Forty-two service users who completed the program scored as follows before and after the intervention: 149.1 ± 31.8 vs. 161.2 ± 35.0 , $df = 41$, $t = 2.70$, $p = 0.01$ (total SSS), and 44.4 ± 12.0 vs. 53.2 ± 13.2 , $df = 41$, $t = 4.72$, $p < 0.001$ (subscale of friend-peer dimension); 69.8 ± 9.8 vs. 72.6 ± 8.8 , $df = 41$, $t = 3.50$, $p = 0.001$ (GAF); 75.2 ± 8.8 vs. 78.1 ± 9.5 , $df = 41$, $t = 2.59$, $p = 0.01$ (C-SFS); and 37.5 ± 35.5 vs. 43.6 ± 38.0 , $df = 41$, $t = 2.57$, $p = 0.01$ (weekly wage). The BPRS-18 score decreased significantly after the intervention (31.2 ± 6.7 vs. 29.3 ± 5.0 , $df = 41$, $t = -2.83$, $p = 0.007$).

Conclusions

Peer co-delivered vocational rehabilitation services can enhance the social support received by persons with schizophrenia and improve their occupational function (as evidenced in the wage increase). The pilot program proposed can thus be a model for non-Western countries with limited resources allocated from the government to support persons with schizophrenia.

Background

Persons with schizophrenia may see their social and/or occupational functions deteriorate during the course of their illness [1, 2], due to the psychotic, affective, and/or cognitive symptoms triggered by the

illness [2, 3]. These individuals also tend to be ill-equipped to make necessary adjustment when facing discrimination in living environments, because of low self-efficacy and internalized stigma [4, 5].

To overcome these challenges, recovery-oriented services have been integrated into the mental health care systems for decades to support persons with schizophrenia [6]. Peer-delivered intervention is one such service that emerged in the past 20 years. Unlike trained professionals, peer support workers who also suffer schizophrenia can share lived experiences and make decisions together with service users [7]. Hence, self-declaration and self-efficacy are emphasized in peer support services to help service users overcome internalized stigma and a sense of powerlessness [4, 6, 8]. Empirical evidence also shows that peer support services can be effective in installing hope and overcoming the aforementioned difficulties, both of which can help persons with psychiatric disabilities to engage more actively in their journey of recovery [9, 10]. Delivered as part of the case management service, peer support services can also reduce hospitalization rates and psychiatric symptoms [9, 11].

Given the proven effectiveness of supported employment [12, 13], peer support services have also been integrated into vocational rehabilitation systems for persons with psychiatric disabilities [14, 15]. During the job match, peer support services delivered as part of supported employment offer individualized assistance, and the preferences of persons with disabilities are always respected [12, 13]. Peer support workers draw from their own lived experiences to help persons with psychiatric disabilities overcome internalized stigma, lower self-esteem and/or self-efficacy at work [4, 13]. Peer support workers also serve as role models for persons with disabilities, by exemplifying the positive outcome that is achievable if persons with disabilities tap into their own predilections, potential, and advantages for employment through self-determination [14, 16]. An earlier study found that peer support worker's "lived experience" motivated persons with disabilities to engage in relationship-building and instilled in them a sense of normalcy, both of which facilitated the forming of mutual support and the pursuit of vocational goals by persons with psychiatric disabilities [14]. However, further investigations are warranted to establish a direct link between the effectiveness of peer support services and vocational rehabilitation among persons with psychiatric disabilities.

In Taiwan, mental health services are mostly provisioned through hospital-based treatment and community care. In 2019, there were 68 community rehabilitation centers and 154 halfway houses in local communities in Taiwan [17]. Persons with psychiatric disabilities living in halfway houses or participating in community-based rehabilitation programs are often provided with sheltered or supported employment. However, vocational rehabilitation is primarily delivered by trained professionals. The large absence of peer support workers is rooted in the lack of insurance coverage and limited government budgets. There have also been few studies focusing on delivering vocational peer support services in non-Western countries.

Therefore, to evaluate the feasibility and effectiveness of peer-delivered services for vocational rehabilitation in Taiwan, we designed a 2-phase pilot program: peer support training in Phase I, and peer co-delivered vocational rehabilitation in Phase II (Table 1). We then compared the social support received

by persons with schizophrenia, their mental health and psychiatric symptoms, and functional outcome before and after the peer co-delivered intervention.

Methods

Participants

There were totally 8 peer support workers and 46 persons with schizophrenia ("service users") participating in the pilot program from April 2017 to August 2018 at the Taipei Veterans General Hospital Yuli Branch (TVGH-YL). The hospital provides treatment and community care for patients with mental illness who reside in the rural area of eastern Taiwan. The TVGH-YL administers a half-way house, a community rehabilitation center, and a supported housing program. The hospital also provides sheltered and supported employment as part of its community care services for persons with mental illness [18].

The inclusion criteria for both phases of the program were: (i) being certified with psychiatric disability of schizophrenia, or with catastrophic illness of schizophrenia in the health insurance system, (ii) living in half-way houses or receiving services from the supported housing program, (iii) participating in a sheltered or supported employment program, and (iv) showing interest in the job of care attendant. The exclusion criteria were: (i) comorbidity of severe physical illnesses which could lead to hospitalization, (ii) acute exacerbation of psychosis, and (iii) a reading ability below the age of 6 years. For phase I, there was one additional inclusion criterion which required experience of caring for elderly persons in the community for at least 1 year.

Pilot program

Training for peer support workers

The training program for peer support workers involves 8 individuals recruited and 7 trained professionals specializing in 6 medical disciplines, respectively. Table 2 details the themes of curriculum at various intervention levels.

Vocational rehabilitation co-led & assisted by peer support workers

Before each vocational rehabilitation session, peer support workers discussed with 2 occupational therapists ("stakeholders") to decide on the content and processes of the session. Peer support workers' involvement should account for at least 50% of the session time to ensure the intensity of support. More specifics about this phase of the program can be found in Table 1.

Measurements

Social support

We used the Social Support Scale (SSS)—initially designed by Liu and later modified by Sung and Yeh [19]—to measure the social support received by service users. The Kaiser–Meyer–Olkin (KMO) value of

0.82 and the Bartlett test of sphericity (BT) of 815.37 ($P < 0.001$) in factor analysis confirm the construct validity of the scale. The internal consistency is also confirmed based on the Cronbach's α of 0.86 [18]. Three dimensions of social support were measured: relatives or family (SSS-R), staff or professionals (SSS-S), and friends or peers (SSS-F). There are 12 5-point questions for each dimension, with a possible total score ranging from 12 to 60.

Mental health and psychiatric symptoms

The Chinese Health Questionnaire-12 (CHQ-12) was employed to measure the mental health of service users. There are 2 questions on positive symptoms of mental health and 10 on psychological and physical discomfort, with a possible total score ranging from 0 to 12. The value of the area under the Relative Operating Characteristic curve (AUC) is 0.85, and the cutoff value is 3/4 [20]. The sensitivity of the questionnaire is 78%, and the specificity, 77% [20]. The lower the score, the better the mental health.

We also measured the positive, negative and general psychiatric symptoms of the service users by using the Brief Psychiatric Rating Scale-18 (BPRS-18) which contains 18 7-point questions. According to Bell et al., the α values which measure internal consistency for positive, negative, and general symptoms in the BPRS are 0.69, 0.68, and 0.46, respectively, which are deemed satisfactory to acceptable [21]. The interrater reliability ($r = 0.87$) is also deemed satisfactory [21].

Social function

We measured the social functions of service users objectively by using the Global Assessment of Functioning (GAF) and subjectively by using the Chinese version of the Social Functioning Scale (C-SFS). The GAF score—which was used alongside the DSM-IV-R manual—ranges from 0 to 100, with 100 representing superior functioning. The scale comprises 10 levels (with an interval of 10 points) of psychiatric disturbance, accompanied by descriptions of impaired psychological, occupational, and social functions associated with the disturbance. Jones et al. reported a reliability coefficient of 0.72 and a significant negative association between the GAF score and patients' medication/support needs [22].

The Chinese version of the Social Functioning Scale (C-SFS) was adapted by Song [23] from the Social Functioning Scale (SFS) developed by Birchwood et al., by factoring in distinct cultural characteristics in Taiwan. There are 7 dimensions in this scale: social engagement/withdrawal (5 items), interpersonal communication (4 items), independence-performance (13 items), recreation (15 items), pro-social (22 items), independence-competence (13 items), and employment/occupation (5 items). The internal consistencies are deemed acceptable to good, with a Cronbach's α value of 0.86 for the scale as a whole and Cronbach's α values ranging from 0.48 to 0.88 for the subscales [23]. The higher the score, the better the social function.

Earned income from employment

Service users' weekly wages from sheltered or supported employment were collected from users' records on file for the 3 months before and after the intervention of vocational rehabilitation. The averaged

weekly income during the 3 months was used as the measure of occupational outcome.

Statistical methods

As all indicators examined in this study were continuous variables, we used paired *t*-test to compare the measurements before and after the intervention. IBM SPSS Statistics 16.0 was employed for statistical analysis.

Results

Characteristics of service users

Table 3 presents the characteristics of users of the peer-supported vocational rehabilitation services. Most of them are middle-aged, and approximately three-fifths are male. Most are single and have received formal education of more than 9 years. Nearly three-fourths live in halfway houses, while the rest participate in the supported housing program. The most common social welfare support which service users receive is disability welfare, followed by exemption from the copayment of health insurance and low-income subsidy, in that order. Roughly two-thirds of service users participate in the sheltered employment program, and the rest, supported employment program. Most service users experience the onset of mental illness during young adulthood and have a long history of hospitalization. About two-fifths have a history of suicide attempt or violent behaviors.

Out of the total of 46 users signing up for the vocational rehabilitation support, 4 later withdrew. One experienced acute exacerbation of psychosis, who exhibited the most severe psychiatric symptoms (BPRS-18 = 45) among all service users and poor self-reported mental health (CHQ = 6) when enrolling to the program. One user returned to her parents' home far away from the program site to care for her elderly mother. The other two failed to reach the threshold of attendance rate of 80% (Table 1).

Pre- vs. post-intervention of peer co-delivered services

As shown in Table 4, despite scoring the lowest before the intervention, the social support from friends or peers (SSS-F) is the only dimension that scores significantly higher after the intervention, and contributes directly to the higher post-intervention score of social support as a whole. The post-intervention score of psychiatric symptoms (BPRS-18) is significantly lower than the pre-intervention score, although the scores of mental health (CHQ-12) do not vary significantly before and after the intervention. The scores of social function as measured by the GAF and the C-SFS increase significantly after the intervention. The weekly wage earned from sheltered or supported employment also increases significantly after the rehabilitation program.

Discussion

The correlation between social support and occupation has been reported in previous studies [24, 25]. In Switzerland, Rüesch et al. found that subjects (261 persons with schizophrenia or affective disorders) with an occupation tended to have a larger social network and that social support mediated the relationship between occupation and quality of life. However, income was weakly or even negatively related to subjects' perceived quality of life [25]. Rollins and colleagues also reported that workplace network characteristics positively correlated with job satisfaction, after studying 100 persons with severe mental illnesses in Chicago [24]. Yet, workplace network characteristics were not strongly related to hourly wages or the overall job tenure, indicating declining perceived social network support (from supervisors and coworkers) with job tenure [24].

Contrariwise, a significant improvement in weekly wage was found in the current study after persons with schizophrenia received vocational rehabilitation support co-delivered by peers. Two factors may have contributed to these divergent findings. First, the pilot program proposed in this study emphasized support from peers who also suffered mental illnesses themselves, which further enriched the quality of the support and connection between peer support workers and service users. Studies by Rüesch et al. and Rollins et al. examined, instead, the more common social network support at the workplace (from supervisors and coworkers who were not mental illness patients) [24, 25]. Secondly, most of the persons with schizophrenia in our study were middle-aged, had an earlier onset of mental illness, and a long history of hospitalization. As various dimensions of social support dwindled over time, the peer co-delivered service support proved particularly timely to bridge the growing gap in their need for support. These two factors might also explain the finding in this study that the social support from friends or peers (SSS-F) was the only dimension that scored significantly higher after the intervention, despite scoring the lowest among all 3 social support dimensions before the intervention.

It is worth noting that the weekly wage earned by the 42 service users in the pilot program grew 16.7% after the intervention. This increase contrasted with a growth of mere 5% (43.3 USD to 45.5 USD) among the 156 persons with mental illness participating in the supported employment program from 2017 to 2018 at the community rehabilitation center of Yuli. Hence, the peer co-delivered rehabilitation intervention proposed in this study appears to improve the occupational function of persons with mental illness more than the regular rehabilitation program.

Our study also revealed positive effects on social functions of persons with schizophrenia after they received peer co-delivered interventions, as measured both subjectively (C-SFS) and objectively (GAF). This finding echoes the evidence documented in the literature that peer support services can yield more improvement in social functions among individuals with mental illnesses than the traditional mental health care. This positive outcome may be derived from the more robust social engagement by service users with peer support workers through mutual interactions, as peer support workers shared their own recovery stories [26]. In our study, as social function also measures the occupational dimension, a higher score associated with the employment component can also lift up the overall social function score. Additionally, the care and skills training that service users received from peer support workers contributed positively to service users' social functions.

Improvements in psychiatric symptoms and reduced rehospitalizations have been reported in studies of persons with mental illness who received peer-delivered services as part of the case management [11, 27]. Our study also demonstrated diminished psychiatric symptoms among persons with schizophrenia after peer co-delivered interventions. This positive outcome may be underscored by the multi-pronged emphasis placed on mental illness management throughout the vocational rehabilitation sessions. To ensure that service users were ready to care for the elderly with disabilities or dementia (one of the objectives of vocational rehabilitation in this pilot program), the learning of coping skills with psychotic symptoms was elaborated on during the workplace problem-solving sessions and reinforced through role-playing under demonstration by peers. Peer support workers also served as "role models" for service users by sharing experiences of how they managed their own illnesses. Peer support workers' empathic and nonjudgmental attitudes were conducive to establishing equal relationships with service users, which allowed peer support workers to share their creativity and knowledge with service users and address challenges arising from mental illnesses [8, 26].

In terms of service users' mental health, there was no significant change after peer co-delivered interventions. As the vocational rehabilitation program helped service users to acquire new care skills, the program also added stress to service users by requiring them to juggle between their current employment and the extended vocational training. This extra stress may have worsened the psychosis of one service user with the worst mental wellbeing when enrolling in the program, who had to drop out. Interestingly, another service user left the program and returned home to care for her elderly mother by actually applying the care skills which she learned from the program.

There are a number of limitations in this study. First, there was no control group, so possible confounding factors were not excluded, such as the improvement of the vocational rehabilitation system as a whole in the society and changes of wage in the overall labor market during the study period. Second, whether the benefits observed during the current study can sustain over a longer period of time remains unknown, given the lack of long-term follow-up. The positive effects demonstrated could be the result of focused attentions paid, during a relatively short timeframe, to the design and implementation of the program by participating professionals trained in various medical disciplines.

Conclusions

Peer co-delivered services as integrated into an extended vocational rehabilitation program can enhance the social support received by persons with schizophrenia and improve their occupational function. The pilot program proposed in the current study can be a model for non-Western countries where only limited resources are allocated from the government to support persons with schizophrenia. The pilot program can also serve as the basis for building a more advanced vocational rehabilitation system jointly supported by peer support workers and trained professionals. Meanwhile, the risk of existing psychosis becoming exacerbated does need to be heeded, due to a heightened level of stress from participating in the rehabilitation program while maintaining commitment to the regular employment.

Abbreviations

SSS

Social Support Scale

CHQ-12

Chinese Health Questionnaire-12

BPRS-18

Brief Psychiatric Rating Scale-18

GAF

Global Assessment of Function

C-SFS

Chinese version of the Social Functioning Scale

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board of the Antai Tian-Sheng Memorial Hospital (#18-062-B). Written consent was obtained from all study participants.

Consent for publication

Not applicable.

Availability of data and materials

The data used and/or analyzed in this study are available upon request from the first author.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

CKY conceived the study, collected and analyzed data, and wrote the manuscript. YCF supervised the study process and manuscript writing. Both authors read and approved the final manuscript.

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Tables

Table 1 Study phases: training & service content, participants, and stakeholders

Phase	Process	Participant	Stakeholder
Phase I: Training for peer support workers	<p>1. Organizing 2 focus group sessions to discuss and decide on the curriculum content</p> <hr/> <p>2. The curriculum includes 12 hours each of lecture & practice (2 hours in total of lecture & practice per week, for 12 weeks)</p>	<ul style="list-style-type: none"> · 8 individuals currently participating in supported employment 	<ul style="list-style-type: none"> · 1 psychiatrist · 2 psychologists · 1 psychiatric nurse · 1 social worker · 1 case manager · 1 occupational therapist
Phase II: Extended vocational rehabilitation co-led & assisted by peer support workers	<p>1. Assessing, by using questionnaires, the social support received by service users, their mental health, psychiatric symptoms and functioning, as well as collecting data of earned (weekly) income by service users before the intervention</p> <hr/> <p>2. Peer support workers as coleaders to train service users for workplace problem-solving (1.5 hours every 2 weeks, 8 sessions in total)</p> <hr/> <p>3. Peer support workers as assistants in care skills training (2 hours per week, for 16 weeks)</p>	<ul style="list-style-type: none"> · 6 of 8 peer support workers who completed training and decided to proceed to Phase II of the program · 46 service users currently participating in sheltered or supported employment 	<ul style="list-style-type: none"> · 2 occupational therapists
Post-intervention follow-up	<p>1. Assessing, by using questionnaires, the social support received by service users, their mental health, psychiatric symptoms and functioning, as well as collecting data of earned (weekly) income by service users after the intervention</p>	<ul style="list-style-type: none"> · 42 service users completed the extended vocational rehabilitation program <hr/> <p><i>Withdrawals:</i></p> <ul style="list-style-type: none"> · 1 service user returning home to care for her elderly mother · 1 service user suffering acute psychosis · 2 service users failing to 	<ul style="list-style-type: none"> · None

meet the threshold
of attendance rate
of 80%

Table 2 Levels of intervention and themes of curriculum for peer support worker training

Intervention level	Themes of curriculum				
	We need peer support	Be healthier and happier	My recovery journey	Recover together	Work together
Community	Introducing the People with Disabilities Rights Protection Act in Taiwan* Dealing with discrimination encountered in communities*	Using resources in communities to cultivate independent living skills, better health, and to find a job***			
Service system	Connecting with other people**	Mental health & mental health promotion*	Concepts of recovery & empowerment at both individual & service team levels*		Coleading problem-solving at the workplace**
		Treatment & rehabilitation in mental health services*	Roles of trained professionals with different specialties & peer support workers in mental health services*		Assisting the vocational rehabilitation training **
Individual	What is the job of peer support workers? *	Cooperating with care-givers and/or trained professionals with different specialties**	Principle of self-determination*	Skills of active listening*	Leadership in a group*
			My life story*	Recognizing critical time points**	Sharing the decisions made during my own vocational journey*
			My experience of managing my own mental illness**	Illustrating my recovery story through role-playing***	Acquiring interviewing skills through simulations***

*one-hour lecture session

**one-hour practice session

***two-hour practice session

Table 3 Characteristics of service users receiving vocational peer support services

Characteristics	N = 46	
Demography	n	(%)
Age (mean \pm SD)	49.1	\pm 9.8
Sex		
Male	27	(58.7)
Female	19	(41.3)
Years of education		
6 years	3	(6.5)
7-9 years	10	(21.7)
10-12 years	13	(28.3)
>12 years	20	(43.5)
Marital status		
Single	44	(95.7)
Married	2	(4.3)
Housing		
Halfway house	34	(73.9)
Supported housing program	12	(26.1)
Social welfare		
Disability welfare	35	(76.1)
Exemption from copayment of health insurance	25	(54.3)
Low-income subsidy	14	(30.4)
Monthly income*		
<100 USD	24	(52.2)
100 – 199 USD	7	(15.2)
200 – 299 USD	6	(13.0)
300 – 399 USD	4	(8.7)
> 400 USD	5	(10.9)
Physical comorbidity	30	(65.2)
Psychiatric history		

Age of onset (mean \pm SD)	25.3	\pm 8.8
Years of hospitalization (median (25-75%til))	8.0	(4.0-13.3)
History of violence or suicide attempt	19	(41.3)

SD: standardized deviation

*Wages earned from sheltered or supported employment

Table 4 Pre- vs. post-interventions: social support, mental health, psychiatric symptoms, social function, and earned income

	Pre-intervention		Post-intervention		<i>df</i>	<i>t</i>	<i>P</i> value
	Mean	SD	Mean	SD			
SSS	149.1	31.8	161.2	35.0	41	2.70	0.01*
SSS-R	49.2	14.4	51.0	14.3	41	1.02	0.32
SSS-S	55.5	13.0	57.8	13.9	41	1.63	0.11
SSS-F	44.4	12.0	53.2	13.2	41	4.72	<0.001*
CHQ-12	3.1	2.6	2.8	2.5	41	-1.08	0.29
BPRS-18	31.2	6.7	29.3	5.0	41	-2.83	0.007*
GAF	69.8	9.8	72.6	8.8	41	3.50	0.001*
C-SFS	75.2	8.8	78.1	9.5	41	2.59	0.01*
Weekly Income (USD)	37.5	35.5	43.6	38.0	41	2.57	0.01*

*Statistically significant, $p < 0.05$

SD: standard deviation

SSS: Social Support Scale

SSS-R: Social Support Scale-Relatives or family

SSS-S: Social Support Scale-Staffs or professionals

SSS-F: Social Support Scale-Friends or peers

CHQ-12: Chinese Health Questionnaire-12

BPRS-18: Brief Psychiatric Rating Scale-18

GAF: Global Assessment of Function

C-SFS: Chinese version of Social Function Scale