Knowledge and Attitude of 851 Nursing Personnel toward Depression in General Hospitals of Korea

Seon-Cheol Park,[1,2] Hwa-Young Lee,[3]
Dong-Woo Lee,[4] Sang-Woo Hahn,[5]
Sang-Ho Park,[6] Yeo-Ju Kim,[7]
Jae Sung Choi,[8] Ho-Sung Lee,[8]
Soyoung Irene Lee,[9] Kyoung-Sae Na,[10]
Sung Won Jung,[11] Se-Hoon Shim,[3]
Joonho Choi,[12] Jong-Woo Paik,[13]
and Young-Joon Kwon[3]

[1]Department of Psychiatry, Yong-In Mental Hospital, Yongin; [2]Institute of Mental Health, Hanyang University, Seoul; [3]Department of Psychiatry, Soonchunhyang University Cheonan Hospital, Cheonan; [4]Department of Psychiatry, Inje University Sanggye Paik Hospital, Seoul; [5]Department of Psychiatry, Soonchunhyang University Seoul Hospital, Seoul; [6]Division of Cardiology, [7]Division of Endocrinology, [8]Division of Pulmonology and Allergy, Department of Internal Medicine, Soonchunhyang University Cheonan Hospital, Cheonan; [9]Department of Psychiatry, Soonchunhyang University Bucheon Hospital, Bucheon; [10]Department of Psychiatry, Gachon University School of Medicine, Incheon; [11]Department of Psychiatry, Keimyung University Dongsan Medical Center, Daegu; [12]Department of Psychiatry, Hanyang University Guri Hospital, Guri; [13]Department of Psychiatry, Kyung Hee University School of Medicine, Seoul, Korea

Received: 24 November 2014
Accepted: 17 February 2015

Address for Correspondence:
Hwa-Young Lee, MD
Department of Psychiatry, Soonchunhyang University Cheonan Hospital, 31 Suncheonhyang 6-gil, Dongnam-gu, Cheonan 330-930, Korea
Tel: +82-41-570-3876, Fax: +82-41-592-3804
E-mail: leehy@schmc.ac.kr

Funding: Our study was supported by the grants from the National Center for Mental Health Research & Education, the Seoul National Hospital, Republic of Korea and Soonchunhyang University Research Fund (No. 20130621).

Our study aimed to examine the knowledge and attitude of nursing personnel toward depression in general hospitals of Korea. A total of 851 nursing personnel enrolled at four university-affiliated general hospitals completed self-report questionnaires. Chi-square tests were used to compare the knowledge and attitude of registered or assistant nurses toward depression. In addition, binary logistic regression analysis was used to adjust for the following confounders: age-group and workplace. Registered and assistant nurses differed in their knowledge and attitude toward depression. The proportion of rational and/or correct responses were higher in registered nurses than assistant nurses for the following: constellation of depressive symptoms defined by DSM-IV (adjusted odds ratio [aOR], 3.876; $P < 0.001$); suicide risk in depression recovery (aOR, 3.223; $P = 0.001$) and psychological stress as a cause of depression (aOR, 4.370; $P < 0.001$); the relationship between chronic physical disease and depression (aOR, 8.984; $P < 0.001$); and other items. Our results suggest that in terms of the biological model of depression, the understanding of registered nurses is greater than that of assistant nurses. Moreover, specific psychiatric education programs for nursing personnel need to be developed in Korea. Our findings can contribute to the development of a general hospital-based model for early detection of depression in patients with chronic medical diseases.

Keywords: Nursing Personnel; Knowledge; Attitudes; Depression; Medical Diseases

INTRODUCTION

Depression has become one of the most significant issues in public mental health worldwide because of its great level of social and economic burden (1-4). Comorbid depression has been linked to poor medical outcomes and high mortality rates in patients with physical disease. The relationship between depression and physical disease can be complex and reciprocal. Moreover, physical disease can enhance an individual's risk for depression (5). Based on results from 30,801 adults in the US National Health Interview Survey (1999) (6), the prevalence of depression in adults without chronic medical disease was 4.7%. However, in adults with one, two, and three medical physical conditions, the prevalence of depression was 7.7%, 9.8%, and 12.0%, respectively. Overall, the risk for depression increases when the number of concurrent medical diseases increases. Conversely, depression can be one of the contributors for worsening the clinical features of medical disease (7). For an example, depressive symptoms have been proposed as a predictor for pain at six-month follow-up in patients with rheumatoid arthritis (8). The UK National Institute of Clinical Excellence has recommended that screening for depression should be performed in patients with physical medical conditions with a prior history of depression, physical disability, or other mental problems, including major cognitive disorders, in the settings of primary care and general hospitals (9). In addition, the US Preventive Services Task Force has found that the accuracy for detection of depressed patients in primary care settings is improved by screening for depression (10). However, clinical physicians in the UK beyond the department of psychiatry were confronted with significant barriers in dealing with depression, including lack of access to mental health professionals, lack of time, poor reimbursement

for depression treatment, distraction by other presenting symptoms and signs, and patient reluctance to be referred to a psychiatrist (11). Based on the results of a British national survey, the prevalence of depression after myocardial infarction has been underestimated by general practitioners and nurses (12).

A systematic review and meta-analysis for 4,440 subjects in 14 studies demonstrated that nurse-delivered collaborative care for depression in patients with long-term physical health problems resulted in more effective outcomes as compared to usual care (13). Hence, the systemization for the process of depression screening in general hospitals and/or outpatient clinic settings can enhance the effectiveness of treating depression for patients with physical diseases in general hospitals (14). Primary practitioners including nursing personnel play an important role in the patient-centered integrated care for depression and physical/medical disease (15). Most of all, nursing personnel can particularly contribute to the identification of patients with depression in the managing team for physical diseases in general hospitals (16). For survivors of colorectal cancer, chronic hemodialysis patients, heart disease, and diabetes patients, nursing personnel-based screening and referral programs for depression have been suggested contemporarily. Overall, the acceptability and feasibility of the programs have been regarded as fair (12, 16-19).

Despite the importance of nursing personnel in general hospital-based screening and referral programs for depression, a general hospital-based model for early detection of depression in patients with chronic medical diseases has been poorly developed in Korea (15). Therefore, the objective of this study was to reveal the knowledge and attitude of nursing personnel toward depression in general hospitals of Korea for the purpose of providing baseline data for modeling nurse-delivered collaborative care for depressed patients with chronic physical diseases in general hospitals. In addition, our study compared the knowledge and attitudes of registered nurses (RNs) and assistant nurses (ANs) toward depression, and we aimed to reveal the potential factors to explain these differences.

MATERIALS AND METHODS

Subjects and procedure

From April to June 2012, the study enrolled 851 nursing personnel, including 740 RNs and 111 ANs in four university-affiliated general hospitals in Korea. In order to reflect the real situation about knowledge and attitude of nursing personnel toward depression, we did not present any study exclusion criteria. The subjects independently responded to the self-questionnaire about knowledge and attitude toward depression. Hence, the subjects were able to freely reveal their own attitudes about depression and religion-associated beliefs.

Self-questionnaires for knowledge and attitude toward depression

In collaboration with ten nursing personnel in several general hospitals with reference to a previous survey (12), six Korean psychiatrists with a specialty of depression and/or psychosomatic medicine developed the self-reported questionnaires to evaluate knowledge and attitudes of nursing personnel toward depression. The questionnaires were composed of questions regarding socio-demographic data, knowledge about depression (such as diagnostic criteria based on the Diagnostic and Statistical Manual of Mental Disorder, 4th edition (DSM-IV) (18), clinical course of the disease, suicidal risk, attitudes toward depression (false beliefs about depression and relationship with chronic medical disease), clinical needs about psychiatric consultation in treating depression, and depression screening methods in clinical settings. Religious ideas codified in Shamanism, Buddhism and folk medicine have influenced illness concepts and help-seeking behaviors for depression and other mental disorders in Korean traditional culture (21). The self-questionnaire was totally composed of 29 items. Several items concerning these trends were also included in the questionnaire. Although some of the items for the self-questionnaire ranged from 1- (completely invalid) to 5- (completely valid) points according to the Likert scale, the study subjects' responses were transformed into the dummy variables for the purpose of statistical efficiency. Hence, a valid or completely valid response was defined as favorable in forward questions, whereas an invalid or completely invalid response was defined as favorable in backward questions. On the items for knowledge about depression, the responses were dichotomized. Since the self-questionnaire was made to identify knowledge and attitudes of nursing personnel toward depression, most of the items were not suitable for standardization. Hence, the standardization process was omitted, which was consistent with the study design of the prior study (22).

Statistical analyses

Overall descriptive statistical analyses were performed. Socio-demographic characteristics and responses to self-questionnaires of the RNs and ANs were compared using chi-square test for discrete variables. To reduce family wise error rate due to multiple comparisons, the statistical significance level was set at $P < 0.01$ (two-tailed) for all tests. All statistical analyses were conducted and performed using SPSS 18.0 for Windows (SPSS Inc., Chicago, IL, USA).

Ethics statement

This study was approved by the institutional review board of Cheonan Hospital at Soonchunhyang University (receipt number: SCHCA_IRB_2012-57). Written informed consents were provided by all study subjects prior to participation.

RESULTS

Baseline characteristics of the subjects

As shown in Table 1, nearly all nursing personnel were female (98.1%). The difference of the female to male ratio between the two groups was not significant (aOR [adjusted odds ratio], 2.114; $P = 0.474$). In addition, a majority of nursing personnel were licensed as RNs (87.0%) and worked at outpatient clinics or inpatient wards (77.2%). Overall, RNs had a significantly higher proportion of workers in relatively young groups ($\chi^2 = 11.347$, $P = 0.010$). A greater proportion of ANs worked at outpatient clinics and inpatient wards ($\chi^2 = 21.937$, $P < 0.001$) than RNs. For the purpose of excluding the effects of confounding variables, demographic characteristics and responses to self-questionnaires were compared after adjusting for the effects of age-group and workplace.

Knowledge toward depression

As shown in Table 2, in terms of knowledge toward mental disorders and depression, 78.9% and 82.1% of study subjects assessed themselves as having above average levels for knowledge, respectively. However, only 3.1% of study subjects could identify core symptoms associated with depression; 22.1% could identify depression-based symptoms; 29.0% could identify the number of depressive symptoms; and 8.6% could name the duration of depressive symptoms in the diagnostic criteria for major de-

pressive episode (DSM-IV). In contrast, subjects had a more robust knowledge of suicide and the need for quick treatment regarding that specific condition. Regarding questions about the need to be hospitalized in suicidal patients and heightened suicidal risk during the recovery period of depression, 69.9% and 75.3% of nurses responded as certainly needed and certainly increased, respectively.

RNs also had significantly higher proportions of above average knowledge in terms of self-estimation of knowledge toward mental disorders (aOR, 1.928; $P = 0.05$). In addition, RNS had more correct answers on constellation of depressive symptoms (aOR, 3.876; $P < 0.001$), number of depressive symptoms (aOR, 2.322; $P = 0.002$), and on increased suicidal risk during recovery period of depression (aOR, 3.223; $P = 0.001$) than ANs. There was no difference in the proportion of above average knowledge in terms of self-reported estimation for knowledge toward depression (aOR, 1.493; $P = 0.158$), correct answers to questions about core symptoms in depression (aOR, 0.326; $P = 0.280$), duration of depressive symptoms (aOR, 2.499; $P = 0.066$), or psychiatric hospitalization for suicidal patients (aOR, 1.977; $P = 0.098$) between the two groups.

Attitude toward depression

As shown in Table 3, a total of 92.1%, 92.8%, and 95.9% of nurses considered that depression could not be caused only by stressful events, weakened willpower, or his/her own faults, respec-

Table 1. Socio-demographic characteristics of registered and assistant nurses

Parameters	No. (%) of samples			Statistical coefficient	Unadjusted P value	Adjusted P value*
	Total samples (n = 851)	Registered nurses (n = 740)	Assistant nurses (n = 111)			
Female	835 (98.1)	724 (97.8)	110 (99.1)	$\chi^2 = 0.784$	0.376	0.474
Age-group (yr)				$\chi^2 = 11.347$	0.010	-
20-29	361 (42.4)	323 (43.6)	38 (34.2)			
30-39	293 (34.4)	256 (34.6)	37 (33.3)			
40-49	166 (19.5)	132 (17.8)	34 (30.6)			
> 50	31 (3.6)	29 (3.9)	2 (1.8)			
Worked at outpatient clinic and inpatient ward	657 (77.2)	552 (74.6)	105 (94.6)	$\chi^2 = 21.937$	< 0.001	-

*Adjusted for the effect of age-group and workplace.

Table 2. Knowledge of depression in registered and assistant nurses

Knowledge degree	No. (%) of samples			Statistical coefficient	Unadjusted P value	Adjusted P value*
	Total samples (n = 851)	Registered nurses (n = 740)	Assistant nurses (n = 111)			
Above-average knowledge						
Self-report estimation of knowledge toward mental disorders	672 (79.0)	595 (80.4)	77 (69.4)	$\chi^2 = 7.078$	0.008	0.005
Self-reported estimation of knowledge toward depression	741 (87.2)	649 (87.8)	92 (82.9)	$\chi^2 = 2.105$	0.147	0.158
Correct answer to question						
Core symptoms of depression	27 (3.2)	26 (3.5)	1 (0.9)	$\chi^2 = 2.145$	0.143	0.280
Constellation of depressive symptoms	188 (22.1)	179 (24.2)	9 (8.1)	$\chi^2 = 14.503$	< 0.001	< 0.001
Number of depressive symptoms	247 (29.0)	228 (30.8)	19 (17.1)	$\chi^2 = 8.786$	0.003	0.002
Duration of depressive symptoms	73 (91.4)	68 (9.2)	5 (4.5)	$\chi^2 = 2.701$	0.100	0.066
Psychiatric hospitalization for suicidal patients	809 (95.1)	707 (95.5)	102 (91.9)	$\chi^2 = 2.739$	0.098	0.092
Increased suicidal risk during recovery period of depression	810 (95.2)	712 (96.2)	98 (88.3)	$\chi^2 = 113.229$	< 0.001	0.001

*Adjusted for the effect of age-group and workplace.

Table 3. Attitude toward depression in registered and assistant nurses

Attitudes	No. (%) of samples			Statistical coefficient	Unadjusted P value	Adjusted P value*
	Total samples (n = 851)	Registered nurses (n = 740)	Assistant nurses (n = 111)			
Favorable judgment on false beliefs for depression						
Depression is caused only by the stressful event	784 (92.1)	696 (94.1)	88 (79.3)	$\chi^2 = 29.049$	< 0.001	< 0.001
Depression is caused only by weakened willpower	619 (72.8)	573 (77.5)	46 (41.4)	$\chi^2 = 63.533$	< 0.001	< 0.001
Depression is caused only by his/her own faults	816 (95.9)	720 (97.3)	96 (86.5)	$\chi^2 = 28.605$	< 0.001	< 0.001
Depression is a transient condition, resulted from emotional distress	774 (91.0)	690 (93.2)	84 (75.7)	$\chi^2 = 36.197$	< 0.001	< 0.001
Depression is just a sad or tired condition	789 (92.6)	693 (93.6)	95 (85.6)	$\chi^2 = 9.154$	0.002	0.004
Depression cannot be improved	831 (97.6)	725 (98.0)	106 (95.5)	$\chi^2 = 2.582$	0.108	0.165
Depression is a subtype of possession syndrome	843 (99.1)	734 (99.2)	109 (98.2)	$\chi^2 = 1.018$	0.313	0.291

*Adjusted for the effect of age-group and workplace.

Table 4. Depression screening tool usage for patients with physical diseases in registered and assistant nurses

Screening tools	No. (%) of samples			Statistical coefficient	Unadjusted P value	Adjusted P value*
	Total sample (n = 851)	Registered nurse (n = 740)	Assistant nurse (n = 111)			
Favorable understanding the influences of chronic physical disease on depression	749 (88.0)	685 (92.6)	64 (57.7)	$\chi^2 = 111.506$	< 0.001	< 0.001
Psychiatric counseling as further needed strategy	376 (44.2)	340 (45.9)	36 (32.4)	$\chi^2 = 7.147$	0.008	0.006
Social stigma toward psychiatry as barrier to be engaged in psychiatric consultation	494 (58.2)	425 (57.6)	69 (62.2)	$\chi^2 = 0.8320$	0.362	0.946
Absent experience for depression screening tool† usage	772 (91.1)	666 (90.5)	106 (95.5)	$\chi^2 = 2.995$	0.084	0.046
Present intent for later use of depression screening tool	640 (75.5)	574 (77.9)	66 (59.5)	$\chi^2 = 17.689$	< 0.001	< 0.001

*Adjusted for the effect of age-group and workplace; †Including Geriatric Depression Scale (GDS), Beck Depression Inventory (BDI), Hospital Anxiety and Depression Scale (HADS), and Patient Health Questionnaire (PHQ-9).

tively. In terms of clinical course and prognosis of depression, 91.0% of nurses considered that the statement 'depression is not a disease but a transitional condition, resulted from emotional distress' was wrong or very wrong. Moreover, 92.6% of nurses considered that the statement 'depression is just a sad or tired condition' was wrong or very wrong. A total of 97.6% of nurses considered that the statement 'depression cannot be improved' was wrong or very wrong, whereas 99.1% of nurses considered that the statement 'depression is a subtype of possession syndromes' was wrong or very wrong.

In addition, RNs had a significantly higher proportion of favorable judgments regarding incorrect myths on depression, including the propositions that 'depression is caused only by stressful events (aOR, 4.370; P < 0.001)', 'depression is caused only by weakened willpower (aOR, 5.475; P < 0.001)', 'depression is caused only by his or her own faults (aOR, 6.556; P < 0.001)', 'depression is not a disease but a transitional condition, resulted from emotional stress (aOR, 4.390; P < 0.001)', and 'depression is just a sad or tired condition (aOR, 2.515; P = 0.004)' than ANs. There was no difference in the proportions of favorable judgments on false beliefs, including refractoriness of depression (aOR, 2.133; P = 0.165) and the association of possession syndrome with depression (aOR, 2.503; P = 0.291) between the two groups.
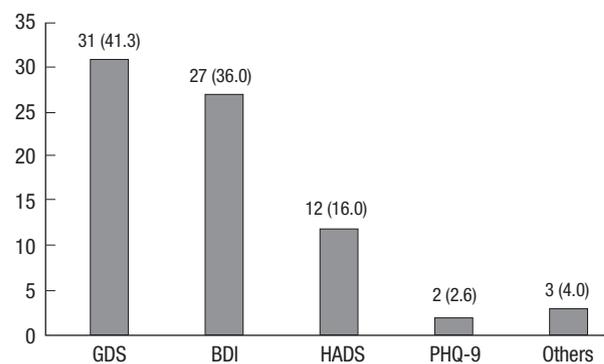

Fig. 1. Depression screening tools used by nursing personnel in general hospitals (n = 75), n (%). BDI, Beck Depression Inventory (21); GDS, Geriatric Depression Scale (20); HADS, Hospital Anxiety and Depression Scale (22); PHQ-9, Patient Health Questionnaire (23).

Depression screening tool usage for patients with chronic physical diseases

As shown in Table 4, 88.0% percent of nurses surveyed recognized the potential relationship between depression and chronic physical disease. Hence, psychological counseling for patients with chronic physical disease (44.2%), promotion programs (22.6%), guidebooks (16.6%), public lectures (14.8%), and others (1.9%) were suggested as needed strategy to heighten psychiatric treatments for depressed patients. Furthermore, social stigma for psychiatry (58.0%), poor knowledge for depressed
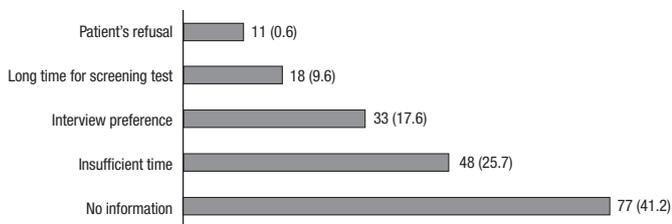
Fig. 2. Reason for absent intent for later use of depression screening tools (n = 187), n (%).

patients (23.6%), insufficient time (8.1%), and beyond capacity (8.6%) were suggested as the barrier to the engagement of psychiatric consultation. Moreover, 91.1% of surveyed subjects had ever used a depression screening tool for patients with chronic physical disease in a general hospital-based clinical setting. As shown in Fig. 1, depression screening tools that had previously been used by nursing personnel (n = 75) included Geriatric Depression Scale (GDS) (23) (n = 20), Beck Depression Inventory (BDI) (24) (n = 21), Hospital Anxiety and Depression Scale (HADS) (25) (n = 22), and Patient Health Questionnaire (PHQ-9) (n = 23). In addition, a total of 75.5% nurses presented intent for later time use for depression screening tool. As shown in Fig. 2, the remaining portion (n = 187) stated that they had no intention to use depression screening tools in their practice. Lack of information, insufficient time, preference for a psychiatric interview, and others were given as main reasons.

RNs had significantly higher proportions of favorable understanding on the potential relationship between chronic physical disease and depression (aOR, 8.984; $P < 0.001$), preference of psychiatric counseling as further needed strategy to heighten treatment for depressed patients (aOR, 1.827; $P = 0.006$), and present intent for later use of depression screening tool (aOR, 2.817; $P < 0.001$) than ANs. There was no difference in the proportions of recognition of social stigma toward psychiatry as barrier to the engagement of psychiatric consultation (aOR, 0.983; $P = 0.946$) or experience for depression screening tool usage (aOR, 0.380; $P = 0.046$) between the two groups.

DISCUSSION

Overall, our survey revealed a discrepancy between existing knowledge and attitude of nursing personnel toward depression in general hospitals of Korea. Although RNs did significantly superior to ANs in terms of some knowledge about diagnostic constructs of major depressive episodes, most RNs also presented incorrect answers about the items for diagnosis of depression. However, it should also be noted that the operational definition of DSM-IV diagnostic criteria for a major depressive episode can also make it difficult to correctly cite the diagnostic criteria for nursing personnel (27). The heterogeneity of depressive disorders can also make it difficult for nursing personnel to

conceptualize their diagnostic constructs (28).

In particular, nursing personnel have been little affected by false beliefs or incorrect myths about depression and mental disorders. In terms of the biological model for depressive disorder, it can be extrapolated that the understanding of RNs has been greater than that of ANs. Previous study has suggested that more qualified education for psychiatry can make ANs understand patients with mental illness more medically in Korea (29). Thus, education and/or training for ANs should focus on the hypothesis that depression is not only influenced by psychosocial factors, but also by biological factors under the conceptualization of biomedicine. Substantial nursing personnel have recognized the suicidal risk of depressed patients in our study. From previous findings, Japanese nursing personnel have relatively negative attitude toward patients who had attempted suicide. In addition, Japanese nursing personnel also have poor training about sympathetic care towards that those patients (30). Moreover, the emphatic approach and rapport formation activity of nursing staff have been emphasized in the management for suicidal patients (31). Hence, nursing personnel in Korea also need to be educated and/or trained about their relationship with suicidal patients.

Most nursing personnel have never used screening tools for depression. A substantial portion of them have no intent to ever use a screening tool for depression in a clinical setting. More than a quarter of subjects responded that they had no intent for later use of depression screening tools to identify depression among patients with chronic physical diseases. This trend has been more prevalent in RNs compared to that in ANs. Despite the existence of a number of depression screening tools, a limited range of depression screening tools including GDS (23), BDI (24), HADS (25), and others were used in our study. Our findings are inconsistent with existing findings by US oncologists who prefer asking direct questions to patients rather than using a screening instrument in a national survey (32). However, the screening tool has been suggested as a reliable and valid method for measuring depressive symptoms (33). In order to promote efficient referral of patients with depression and chronic physical disease to psychiatrists in a general hospital, the necessity of using screening instruments for depression should be emphasized to nursing personnel, especially RNs. Due to the presence of a lot of depression screening tools, selecting one of them could be a daunting task. Hence, depression screening tools should be optimized with special clinical condition (34). In addition, for nursing personnel in general hospitals of Korea, it should be emphasized that depression screening administered with specific tool is needed in clinical practices for patients with medical diseases. Although in terms of relationship between chronic physical diseases and depression, RNs have decision-making power over ANs, ANs should have greater education for the reciprocal relationship between chronic physical diseases

and depression.

Interestingly, roughly half of surveyed subjects referred to patient conceptualization of social stigma related to psychiatry as the main obstacle preventing psychiatric consultation. This result is novel in the existing literature. It is inconsistent with a finding that lack of access to mental health specialist has been regarded as the main cause of perceived barriers to dealing with depression by UK general physicians (11). Thus, social stigma and prejudice for psychiatry may be an important issue for better treating depression in patients with chronic physical disease in Korea. There are a number of ways to potentially reduce the impact of social stigma, including public education, guidebooks, and psychiatric counseling.

There are limitations to our study. First, the subjects who have been nursing personnel in university-affiliated general hospitals in Korea might have the limitation of not generally representing nurses countrywide, particularly in different clinical settings. Second, psychiatric nursing personnel have been included in our study. In addition, specialty area and duration of working as RNs or ANs was not collected. Hence, the influence of working experience on knowledge and attitude toward depression cannot be excluded. Third, the nursing personnel's career, job specifications, depth and quality of interaction with patients, and other various factors as well as academic attainment can contribute to differences of knowledge and attitudes toward depression. In spite of these facts, psychometric assessments covering these factors were not used in our study. Fourth, nursing personnel's career in psychiatry can greatly contribute to attitudes and beliefs about depression, compared to their specialty and duration of work. However, work experience and career for psychiatry were evaluated in our study.

Despite the noted limitations, our study presents pioneering data on the trends of knowledge and attitude of nursing personnel toward depression and depression screening in general hospitals of Korea. Thus, our findings can be the underpinnings to the development of a general hospital-based model for early detection of depression in patients with chronic medical diseases. Based on this study, further development of nursing personnel-led depression screening and referral programs is needed in general hospitals of Korea. For example, further study is needed for bridging the derivative of our study and developing the education program for nursing personnel. Hence, we can speculate that by enhancing the understanding of nursing personnel toward depression, the refusal of patients with chronic physical disease to receive psychiatric consultation in the realm of consultation-liaison psychiatry may be reduced.

DISCLOSURE

The authors have no conflicts of interest to disclose.

AUTHOR CONTRIBUTION

Conceived and designed the study: Park SC, Lee HY, Lee DW, Hahn SW, Choi J, Kwon YJ. Performed the study: Lee HY, Lee DW, Hahn SW, Park SH, Kim YJ, Choi JS, Lee HS, Lee SI, Na KS, Jung SW, Shim SH, Paik JW, Kwon YJ. Analyzed the data: Park SC, Lee HW, Choi J. Wrote the first draft of the manuscript: Park SC, Lee HW, Choi J. Revision of manuscript: Park SC, Lee HW, Lee DW, Hahn SW, Choi J, Kwon YJ. Agree with results and conclusions and accept final manuscript: all authors.

ORCID

Seon-Cheol Park *http://orcid.org/0000-0003-3691-4624*
Hwa-Young Lee *http://orcid.org/0000-0002-2749-6232*
Dong-Woo Lee *http://orcid.org/0000-0002-6383-1974*
Sang-Woo Hahn *http://orcid.org/0000-0003-1662-5438*
Sang-Ho Park *http://orcid.org/0000-0001-7912-0336*
Yeo-Ju Kim *http://orcid.org/0000-0002-9786-7078*
Jae Sung Choi *http://orcid.org/0000-0002-8673-8131*
Ho-Sung Lee *http://orcid.org/0000-0002-0074-4988*
Soyoung Irene Lee *http://orcid.org/0000-0001-9087-3734*
Kyoung-Sae Na *http:// orcid.org/0000-0002-0148-9827*
Sung Won Jung *http://orcid.org/0000-0002-2300-742X*
Se-Hoon Shim *http://orcid.org/0000-0002-3137-6591*
Joonho Choi *http://orcid.org/0000-0003-0597-0878*
Jong-Woo Paik *http://orcid.org/0000-0002-1804-8497*
Young-Joon Kwon *http://orcid.org/0000-0001-9340-0895*

REFERENCES

1. Park SC, Oh HS, Oh DH, Jung SA, Na KS, Lee HY, Kang RH, Choi YK, Lee MS, Park YC. *Evidence-based, non-pharmacological treatment guideline for depression in Korea. J Korean Med Sci 2014; 29: 12-22.*

2. Park S-C, Lee SK, Oh HS, Jun T-Y, Lee M-S, Kim J-M, Kim J-B, Yim H-W, Park YC. *Hazardous drinking-related characteristics of depressive disorders in Korea: the CRESCEND Study. J Korean Med Sci 2015; 30: 74-81.*

3. Kim KW, Kim SH, Shin JH, Choi BY, Nam JH, Park SC. *Psychosocial, physical, and autonomic correlates of depression in Korean adults: results from a county-based depression screening study. Psychiatry Investig 2014; 11: 402-11.*

4. Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, Charlson FJ, Norman RE, Flaxman AD, Johns N, et al. *Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. Lancet 2013; 382: 1575-86.*

5. Himelhoch S, Weller WE, Wu AW, Anderson GF, Cooper LA. *Chronic medical illness, depression, and use of acute medical services among Medicare beneficiaries. Med Care 2004; 42: 512-21.*

6. Burvill PW. *Recent progress in the epidemiology of major depression. Epidemiol Rev 1995; 17: 21-31.*

7. Han H, Wang SM, Han C, Lee SJ, Pae CU. *The relationship between somatic symptoms and depression. Neuro Endocrinol Lett 2014; 35: 463-9.*

8. Schieir O, Thombs BD, Hudson M, Taillefer S, Steele R, Berkson L, Ber-

trand C, Couture F, Fitzcharles MA, Gagné M, et al. *Symptoms of depression predict the trajectory of pain among patients with early inflammatory arthritis: a path analysis approach to assessing change. J Rheumatol 2009; 36: 231-9.*

9. National Institute for Clinical Excellence. *Depression: core interventions in the management of depression in primary and secondary care. London: HMSO, 2004.*

10. Pignone MP, Gaynes BN, Rushton JL, Burchell CM, Orleans CT, Mulrow CD, Lohr KN. *Screening for depression in adults: a summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2002; 136: 765-76.*

11. Richards JC, Ryan P, McCabe MP, Groom G, Hickie IB. *Barriers to the effective management of depression in general practice. Aust N Z J Psychiatry 2004; 38: 795-803.*

12. Haws J, Ramjeet J, Gray R. *A national survey of GP and nurse attitudes and beliefs towards depression after myocardial infarction. J Clin Nurs 2011; 20: 3215-23.*

13. Ekers D, Murphy R, Archer J, Ebenezer C, Kemp D, Gilbody S. *Nurse-delivered collaborative care for depression and long-term physical conditions: a systematic review and meta-analysis. J Affect Disord 2013; 149: 14-22.*

14. Lopes AA, Bragg J, Young E, Goodkin D, Mapes D, Combe C, Piera L, Held P, Gillespie B, Port FK. *Depression as a predictor of mortality and hospitalization among hemodialysis patients in the United States and Europe. Kidney Int 2002; 62: 199-207.*

15. Park SC, Lee HY, Shim SH, Lee DW, Han SW, Park SH, Kim YJ, Choi JS, Jung SW, Lee SI, et al. *A general hospital-based model for early detection of depression in the geriatric patients with chronic medical diseases. Korean J Biol Psychiatry 2013; 20: 31-40.*

16. Wilson B, Spittal J, Heidenheim P, Herman M, Leonard M, Johnston A, Lindsay R, Moist L. *Screening for depression in chronic hemodialysis patients: comparison of the Beck Depression Inventory, primary nurse, and nephrology team. Hemodial Int 2006; 10: 35-41.*

17. Livingston PM, Craike MJ, White VM, Hordern AJ, Jefford M, Botti MA, Lethborg C, Oldroyd JC. *A nurse-assisted screening and referral program for depression among survivors of colorectal cancer: feasibility study. Med J Aust 2010; 193: S83-7.*

18. Morgan M, Dunbar J, Reddy P, Coates M, Leahy R. *The TrueBlue study: is practice nurse-led collaborative care effective in the management of depression for patients with heart disease or diabetes? BMC Fam Pract 2009; 10: 46.*

19. Yackel EE, McKennan MS, Fox-Deise A. *A nurse-facilitated depression screening program in an Army primary care clinic: an evidence-based project. Nurs Res 2010; 59: S58-65.*

20. American Psychiatric Association, American Psychiatric Association Task Force on Dsm-IV. *Diagnostic and statistical manual of mental disorders: DSM-IV-TR. 4th ed. Washington, DC: American Psychiatric Association, 2000.*

21. Lee HY. *Past, Present and future of Korean psychiatry. Psychiatry Investig 2004; 1: 13-9.*

22. Maruta T, Iimori M. *Schizo-nomenclature: a new condition? Psychiatry Clin Neurosci 2008; 62: 741-3.*

23. Jung IK, Kwak DI, Joe SH, Lee HS. *A study of standardization of Korean form of Geriatric Depression Scale (KGDS). J Korean Geriatr Psychiatry 1997; 1: 61-72.*

24. Hahn HM, Yun TH, Shim YW, Kim KH, Yoon DJ, Chung KJ. *A standardization of beck depression inventory in Korea. J Korean Neuropsychiatr Assoc 1986; 25: 487-500.*

25. Oh SM, Min KJ, Park DB. *A study on the standardization of the Hospital Anxiety and Depression Scale for Koreans: a comparison of normal, depressed and anxious groups. J Korean Neuropsychiatr Assoc 1999; 38: 289-96.*

26. Park SJ, Choi HR, Choi JH, Kim K, Hong JP. *Reliability and validity of the Korean version of the Patient Health Questionnaire-9 (PHQ-9). Anxiety Mood 2010; 6: 119-24.*

27. Rosenman S, Nasti J. *Psychiatric diagnoses are not mental processes: Wittgenstein on conceptual confusion. Aust N Z J Psychiatry 2012; 46: 1046-52.*

28. Østergaard SD, Jensen SO, Bech P. *The heterogeneity of the depressive syndrome: when numbers get serious. Acta Psychiatr Scand 2011; 124: 495-6.*

29. Choi SM, Jang KJ. *The effect of psychiatric nursing-assistance education schedule on the attitudes toward mental illness. J Korean Neuropsychiatr Assoc 1996; 35: 1105-16.*

30. Kishi Y, Kurosawa H, Morimura H, Hatta K, Thurber S. *Attitudes of Japanese nursing personnel toward patients who have attempted suicide. Gen Hosp Psychiatry 2011; 33: 393-7.*

31. Jones R. *The development of nurse-led suicide prevention training for multidisciplinary staff in a North Wales NHS Trust. J Psychiatr Ment Health Nurs 2010; 17: 178-83.*

32. Pirl WF, Muriel A, Hwang V, Kornblith A, Greer J, Donelan K, Greenberg DB, Temel J, Schapira L. *Screening for psychosocial distress: a national survey of oncologists. J Support Oncol 2007; 5: 499-504.*

33. Bowden K, Fitzgerald SA, Piamjariyakul U, Werkowitch M, Thompson NC, Keighley J, Smith CE. *Comparing patient and nurse specialist reports of causative factors of depression related to heart failure. Perspect Psychiatr Care 2011; 47: 98-104.*

34. Mitchell AM. *Overview of depression scales and tools. In: Mitchell AM, Coyne JC. editors. Screening for depression in clinical practice: An evidence-based guide. Oxford: Oxford University Press, 2010, p29-56.*