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Support from superiors reduces depression in Republic of Korea military officers

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ABSTRACT

Background The prevalence of depression is relatively high in the Korean military. Social support is a protective factor against depression and is classified into four categories: emotional support—having the sense of feeling loved; instrumental support—receiving material assistance; informational support—receiving advice; appraisal support—feeling valued and respected for one's abilities.

Objective To investigate the effect of support from one's superior on depression among Republic of Korea (ROK) military officers.

Methods 2047 participants from the 2015 Military Health Survey were included in the study. The Korean version of the Beck Depression Inventory was used to measure depression, and a self-reported questionnaire was used to assess support from one's superior. A chi-squared test and multiple logistic regression were used to analyse the data.

Results Of the 2047 participants, 177 (8.6%) had depression. Military officers who did not receive support from their superior were more likely to have depression than than those who did receive support (OR=2.09, 95% CI 1.30 to 3.36). Additionally, military personnel who did not receive emotional or appraisal support were more likely to have depression (emotional support: OR=2.37, 95% CI 1.31 to 4.29; appraisal support: OR=1.56, 95% CI 1.48 to 2.75).

Conclusions Our study found that depression in military officers was associated with lack of support from superiors. In particular, emotional support and appraisal support had a statistically significant effect. Therefore, we suggest that the ROK armed forces consider early intervention and management for high-risk groups. A social support programme and organisational atmosphere are also needed to improve supportive ability and skills of superiors.

INTRODUCTION

Depression is a common mental disorder worldwide. According to the World Health Organization's global health estimates (2017), 4.4% of the world's population have depression.[1] Depression will be the main leading cause of disease in humanity by 2030.[2] Recognising the worldwide increase in depression, the Republic of Korea (ROK) has been conducting a mental health survey since 2001. According to the 2016 Survey of Mental Disorders in the ROK, the prevalence of major depressive disorder was 5.0% (men: 3.0%; women: 6.9%),[3] which is higher than the global prevalence of depression (4.4%). Additionally, the suicide rate in the ROK ranks second among countries in the Organisation for Economic Co-operation and Development.[4] Management of depression in Korean society is urgently needed because depression negatively affects the person and society.[5 6]

Risk factors for depression include genetic and sociodemographic factors. The military environment could be a risk factor for depression. In a closed and poor military environment, ROK military personnel experience a strict hierarchy, conflict between ranks, and geographical separation from, and limited communication with, families and loved ones, which can cause psychological tension, anxiety and depression.[7 8] Maladaptive psychological conditions, such as depression, can have a negative effect on job satisfaction and organisational commitment.[9] In addition, depression in military leaders can negatively affect the soldiers that they manage, representing a significant threat to the ability of fighting forces.

According to the Ministry of National Defense's Depressive Index survey, the prevalence of depression was 5.0% in 2016.[10] In addition, from 2009 to 2018, suicide-related deaths accounted for the largest proportion of all military deaths.[11] In particular, the number of military officers who committed suicide has increased,[11] indicating that there is an urgent need to deal with depression and establish a mental health policy for these officers.

Social support can improve one's mental health and act as a protective factor against depression.[12] A study conducted in the United States reported that military social support acted as a buffer against post-traumatic stress symptoms, and it became more important at higher levels of stress.[13] Social support has been defined as a factor that allows individuals to overcome a situation with the use of positive resources and can be classified into four categories.[14 15] *Emotional support* is the provision of respect, trust, love, care and concern for another. *Instrumental support* is the provision of material assistance, such as goods, money, labour or one's time. *Informational support* is the provision of advice, suggestions, information and directives, which can be used to help solve a person's problem. *Appraisal support* is the provision of specific information about the individual's role, performance and behaviour, to enable self-assessment. It includes feedback and social comparison. One's superior plays an important role in the workplace and is often in the position of providing emotional, instrumental, informational and appraisal support to the supervisee. Several studies have found that different types of social support may have unique influences on depression.[16 17] In particular, research has shown that emotional support is a more important protective factor than instrumental support.[16]

Most previous research into mental health in the military has focused on soldiers' stress and maladjustment, but few studies have examined depression in military officers. As military officers have responsibility for leading and guiding soldiers, it is crucial to understand what characteristics are associated with
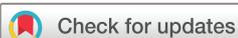
depression and how perceived social support from one's superior is a protective factor. Given that support from one's superior may play an important role in depression in military officers, this study aimed to investigate the positive effects of the four types of social support on their depression.

METHODS
Participants
This study used raw data from the Military Health Survey (MHS) conducted in 2015. The data were obtained with the dean's approval from the medical school that conducted the survey. The institutional review board of the ROK Armed Forces Medical Command(AFMC) provided formal ethics approval for use of the MHS dataset (institutional review board approval number AFMC-15060-IRB-15–049). The objective of the MHS is to identify health-related lifestyles, levels of mental and psychological health, and satisfaction with military medical institutions, of military service personnel in order to establish military health policies. Of all the participants in the 2015 MHS, only commissioned, non-commissioned, and warrant officers were selected for inclusion in this study. The final sample consisted of 2047 officers. The characteristics of the participants are presented in Table 1.

Measures
The Korean version of the Beck Depression Inventory (K-BDI) was used to measure depression. The BDI is a 21-item self-report scale designed to assess the presence of depression and the severity of depressive symptoms, including cognitive, emotional, motivational and physical symptoms. Items are rated on a four-point Likert scale ranging from 0 to 3 and are summed to create a total depression score. Scores can range from 0 to 63. The K-BDI provides the following cut-off points: 0–9 (no depression), 10–15 (mild depression), 16–23 (moderate depression) and 24–63 (severe depression). In this study, participants who received a score of 10 or higher were classified as the depressed group.

To assess support from one's superior, we used a questionnaire that was constructed for use with the Korean military,[18] which included the following items: "Superior gives advice to help me do well in military life," "Superior makes me feel emotionally loved," "Superior helps me materially (food, money, etc) when I need it" and "Superior values and respects my abilities and qualities." Possible responses included "not at all," "no," "usually," "yes" and "very much." In this study, those who responded "not at all" or "no" were classified as the non-supported group, and those who responded with "usually," "yes" or "very much" were classified as the supported group.

Participants were asked questions relating to sociodemographic, military-related and health-related factors. Sociodemographic factors included gender, marital status and level of education. Military-related factors included military type, branch, rank, working area, service classification and working hours per week. Health-related factors included questions on smoking, subjective health status, having an accident during military service, suicidal ideation and experiencing stress.

Statistical analyses
A chi-square test was conducted to evaluate the association between participants' characteristics and depression. Logistic regression analysis was performed to determine the effect of each variable on depression using odds ratios (ORs) and 95% confidence intervals (CIs). Additionally, a subgroup analysis was performed according to the four types of support. All analyses were performed using the SAS programme (9.4 version, SAS Institute, Cary, North Carolina, USA), and the significance level was set at $p < 0.05$.

RESULTS
Table 1 shows the results on the relations between the participants' characteristics and depression. We found that 177 (8.6%) of the 2047 military officers were experiencing depression, and depression had a statistically significant relationship with support from one's superior, gender, marital status, working time, subjective health status, suicidal ideation, and stress ($p < 0.05$). The prevalence of depression was higher in women (12.8%), those who were unmarried (9.8%) and military personnel who worked 49 or more hours per week (9.7%). Additionally, depression was more common in military personnel who reported poor health (35.8%), suicidal ideation (61.9%) and experiencing stress (19.2%).

Table 2 shows the results of a logistic regression analysis on the effects of participants' characteristics on depression in military personnel. Military officers who felt unsupported by their superiors were more likely to experience depression (OR=2.09, 95%CI 1.30 to 3.36). Perceiving one's health status as less than good increased the probability of experiencing depression (good: reference; normal: OR=3.38, 95%CI 2.21 to 5.18; bad: OR=10.75, 95%CI 6.31 to 18.30). Additionally, having suicidal ideation (OR=14.05, 95%CI 5.17 to 38.20) or experiencing stress (OR=3.56, 95%CI 2.45 to 5.17) increased the probability of depression. No other characteristics had a significant effect on experiencing depression.

We performed a subgroup analysis on those with depression, depending on whether or not their superiors were supported by covariates (Table 3). Only in the army military officers was depression more likely to occur in the group who did not get support from their superior compared with those who felt they had received support from their superior. There was no significant difference for the navy/marines and air force officers for the effect of social support. There was a higher probability of experiencing depression in the combat group (OR=2.51, 95%CI 1.33 to 4.76) and long-term military service group (OR=2.50, 95%CI 1.25 to 5.00) when military officers felt that they did not receive support from their superior. Those officers who felt healthy (OR=3.36, 95%CI 1.13 to 9.97) or were experiencing stress (OR=2.22, 95%CI 1.19 to 4.15) were more likely to experience depression if not feeling supported. For education level, working time, and suicidal ideation, the ORs of experiencing depression were higher when the military officers felt they were not receiving support (educational levels (high school or less: OR=4.11, 95%CI 1.10 to 15.37; college or more: OR=1.90, 95%CI 1.14 to 3.17), working time (≤48 hours: OR=2.98, 95%CI 1.09 to 8.14, ≥49 hours: OR=1.80, 95%CI 1.04 to 3.11), suicidal ideation (yes: OR=3.32, 95%CI 1.32 to 3.52; no: OR=1.85, 95%CI 1.15 to 2.97)].

We conducted a logistic regression analysis to investigate the effect of the type of support from one's superior (emotional, instrumental, informational and appraisal support). The results are provided in Figure 1. Military officers who felt that they were not receiving emotional support (OR=2.37, 95%CI 1.31 to 4.29) or appraisal support (OR=1.56, 95%CI 1.48 to 2.75) from their superiors had a higher probability of experiencing depression. Instrumental and informational support were not statistically significant.

DISCUSSION
This study investigated the effect of support from one's superior on depression among ROK military officers. Because military personnel are exposed to significant stressors that can lead to mental disorders, it is important to understand how social support from one's superior might serve as a protective factor. A survey of 2047 military

Table 1 Characteristics of participants in relation to depression

Variable	Depression						
	Total		No		Yes		
	n	%	n	%*	n	%*	P value
Support from superior							<0.0001
Yes	625	30.5	601	96.2	24	3.8	
No	1422	69.5	1269	89.2	153	10.8	
Gender							0.0433
Male	1875	91.6	1720	91.7	155	8.3	
Female	172	8.4	150	87.2	22	12.8	
Marital status							0.0231
Married	787	38.4	733	93.1	54	6.9	
Unmarried	1260	61.6	1137	90.2	123	9.8	
Education level							0.623
High school or less	388	19.0	352	90.7	36	9.3	
College or more	1659	81.0	1518	91.5	141	8.5	
Military type							0.8090
Army	1040	50.8	946	91.0	94	9.0	
Navy, marine	370	18.1	340	91.9	30	8.1	
Air force	637	31.1	584	91.7	53	8.3	
Branch							0.6617
Combat	1264	61.7	1152	91.1	112	8.9	
Non-combat	783	38.3	718	91.7	65	8.3	
Rank							0.5590
Commissioned officer (O4-O6)	166	8.1	156	94.0	10	6.0	
Warrant and commissioned officer (W1-O3)	576	28.1	523	90.8	53	9.2	
Non-commissioned officer (E7-E9)	317	15.5	292	92.1	25	7.9	
Non-commissioned officer (E5-E6)	988	48.3	899	91.0	89	9.0	
Working area							0.5019
Ground operations command	1187	58.0	1077	90.7	110	9.3	
Capital area and all military headquarters	101	4.9	93	92.1	8	7.9	
Second operation command	759	37.1	700	92.2	59	7.8	
Service classification							0.2671
Long-term military service	1145	55.9	1053	92.0	92	8.0	
Short-term military service	902	44.1	817	90.6	85	9.4	
Working time (hours per week)							0.0219
≤48	728	35.6	679	93.3	49	6.7	
≥49	1319	64.4	1191	90.3	128	9.7	
Smoking							0.3920
Current smoker	1050	51.3	959	91.3	91	8.7	
Former smoker	117	5.7	103	88.0	14	12.0	
Non-smoker	880	43.0	808	91.8	72	8.2	
Subjective health status							<0.0001
Good	1132	55.3	1096	96.8	36	3.2	
Normal	781	38.2	688	88.1	93	11.9	
Bad	134	6.5	86	64.2	48	35.8	
Accident during military service							0.0718
Yes	113	5.5	98	86.7	15	13.3	
No	1934	94.5	1772	91.6	162	8.4	
Suicidal ideation							<0.0001
Yes	21	1.0	8	38.1	13	61.9	
No	2026	99.0	1862	91.9	164	8.1	
Stress							<0.0001
Yes	647	31.6	523	80.8	124	19.2	
No	1400	68.4	1347	96.2	53	3.8	
Total	2047	100	1870	91.4	177	8.7	

*Percentage of total in the same category.

officers showed that 177 (8.6%) respondents could be classified as experiencing depression, which is higher than the prevalence of a major depressive disorder in adult men in Korea. Given the relatively higher rate of depression, increased awareness of depression in military leaders and prevention and intervention strategies are needed. Those officers who felt they did not receive support

Table 2 Odds ratios for depression based on participant characteristics

Variable	Depression OR (95% CI)
Support from superior	
Yes	1.00
No	2.09 (1.30 to 3.36)
Gender	
Male	0.64 (0.35 to 1.18)
Female	1.00
Marital status	
Married	0.85 (0.51 to 1.42)
Unmarried	1.00
Education level	
High school or less	1.43 (0.90 to 2.27)
College or more	1.00
Military type	
Army	1.00
Navy, marine	0.97 (0.56 to 1.69)
Air force	1.12 (0.63 to 2.00)
Branch	
Combat	1.00
Non-combat	0.94 (0.60 to 1.47)
Rank	
Commissioned officer (O4–O6)	1.11 (0.46 to 2.66)
Warrant officer and commissioned officer (W1–O3)	1.19 (0.76 to 1.87)
Non-commissioned officer (E7–E9)	1.16 (0.63 to 2.16)
Non-commissioned officer (E5–E6)	1.00
Working area	
Ground operations command	1.07 (0.67 to 1.71)
Capital area and all military headquarters	1.58 (0.60 to 4.18)
Second operation command	1.00
Service classification	
Long-term military service	0.90 (0.58 to 1.39)
Short-term military service	1.00
Working time (hours per week)	
≤48	1.00
≥49	1.22 (0.81 to 1.85)
Smoking	
Current smoker	1.01 (0.66 to 1.55)
Former smoker	1.39 (0.69 to 2.81)
Non-smoker	1.00
Subjective health status	
Good	1.00
Normal	3.38 (2.21 to 5.18)
Bad	10.75 (6.31 to 18.30)
Accident during military service	
Yes	1.37 (0.73 to 2.58)
No	1.00
Suicidal ideation	
Yes	14.05 (5.17 to 38.20)
No	1.00
Stress	
Yes	3.56 (2.45 to 5.17)
No	1.00

Table 3 Subgroup analysis of depression and support from one's superior by covariates

	Depression	
	Support from a superior	No support from a superior
Variable	OR	OR (95% CI)
Education level		
High school or less	1.00	4.11 (1.10 to 15.37)
College or more	1.00	1.90 (1.14 to 3.17)
Military type		
Army	1.00	2.45 (1.26 to 4.78)
Navy, marine	1.00	4.72 (0.88 to 25.44)
Air force	1.00	1.26 (0.57 to 2.78)
Branch		
Combat	1.00	2.51 (1.33 to 4.76)
Non-combat	1.00	1.54 (0.73 to 3.26)
Service classification		
Long-term military service	1.00	2.50 (1.25 to 5.00)
Short-term military service	1.00	1.64 (0.85 to 3.17)
Working time (hours per week)		
≤48	1.00	2.98 (1.09 to 8.14)
≥49	1.00	1.80 (1.04 to 3.11)
Subjective health status		
Good	1.00	3.36 (1.13 to 9.97)
Normal	1.00	1.58 (0.86 to 2.90)
Bad	1.00	3.16 (0.87 to 11.53)
Suicidal ideation		
Yes	1.00	3.32 (1.32 to 3.52)
No	1.00	1.85 (1.15 to 2.97)
Stress		
Yes	1.00	2.22 (1.19 to 4.15)
No	1.00	1.85 (0.87 to 3.93)

needs to consider military personnel who have any of these characteristics as vulnerable to, or at-risk of having, depression, and identify and systematically manage depression where indicated.

Social bonds and social support of military peers can have positive effects on the mental health of soldiers.[19] Additionally, a previous study highlighted the importance of support from one's superior, showing that a commander's leadership or attention to maladjustment in soldiers has a positive effect on the mental health of military service personnel.[20] In the controlled, hierarchical environment of
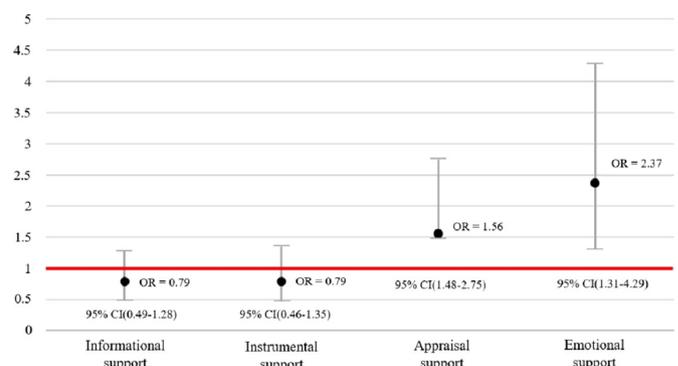
Figure 1 Analysis of types of support from one's superior. Participants who felt they were getting support from their superior were the reference group.

from their superior were more likely to be depressed, supporting the results of previous studies. In addition, the prevalence of depression was higher in women, and in those who were not married, worked longer hours per week, had poorer subjective health, reported having suicidal ideation and were experiencing stress. These results are partially consistent with previous studies. ROK armed forces

the military, a superior's support is a protective factor for depression that can be easily implemented. Lastly, we confirmed that those officers who felt that they did not receive emotional or appraisal support from their superiors were more likely to experience depression. Instrumental and informational support had no effect on depression. Thus, it is especially important for superior military personnel to learn about, and know how to provide, emotional and appraisal support to their subordinates. By paying attention to the needs of subordinates and providing support, superiors' can effectively prevent and mitigate depression in military officers.

Our research had several limitations. First, it is difficult to determine causality because this study is based on cross-sectional data. Additionally, common method bias can occur because all variables were measured by self-report questionnaires in the same respondents. Second, we used the BDI to measure depression. However, in some studies, a high BDI score was obtained even when no psychiatric disorder was present or no depression was diagnosed. Therefore, higher BDI scores do not necessarily mean that a person is clinically depressed.[21] In order to diagnose a person as having a mood disorder, it would be necessary to gather information through a clinical interview and possibly, other questionnaires or psychological tests. Additionally, although the original BDI cut-off score is 16 points,[22] we used 10 points because few military officers had scores indicating that they were experiencing a severe level of depression. We also considered that officers and non-commissioned officers have a tendency to hide their depression owing to the military atmosphere, which meant that there is no differentiation between those who were experiencing a mild versus moderate versus severe level of depression in our study. Lastly, we did not have more recent data because the MHS has not been conducted again since 2015. Thus, we do not know if the findings are currently generalisable to officers in the ROK armed forces.

Despite these limitations, this study has the following strengths. First, the MHS consists of a representative sample by considering the rank, branch, and regional distribution of military personnel in investigating the health behaviour and medical care of soldiers. Second, in contrast to previous studies conducted mainly on soldiers, this study assessed the prevalence of depression of military officers and highlighted the importance of managing it. Third, we identified factors that can have a negative effect on the mood of military officers and confirmed the positive effects of social support from superiors. Our findings are consistent with the results of previous studies examining support from superiors and may be a theoretical basis for preparing and establishing an educational programme for social support in the ROK armed forces. Fourth, by classifying the superiors' support by type, the effect of support was presented in more detail and allowed us to determine the type of support that is most helpful in preventing and alleviating depression.

CONCLUSION

Many studies have shown that social support has a protective effect on depression. Depression in military officers was associated with the extent to which they felt they received support from superiors. In particular, emotional and appraisal support showed a significant association with improving depression.

Based on the findings, we suggest that the ROK armed forces should consider the identified risk factors for depression and provide early intervention and management for high-risk groups. Programmes are needed to develop and improve superiors' ability to provide social support. Counselling skills should be developed for each type of support, and an organisational atmosphere within the military would need to be created to promote such a training programme. Finally, a continuous mental health survey is needed.

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