The Impact of ADL Disability on Depression Symptoms in a Community of Beijing Elderly, China

Jingmei JIANG^{1,3}, Zhe TANG² and Makoto FUTATSUKA³

¹Department of Epidemiology, School of Medicine, Chinese Academy of Medical Sciences, Beijing, China

²Beijing Geriatric Clinical and Research Center, Beijing, China

³Department of Public Health, School of Medicine, Kumamoto University, Japan

Abstracts

Objectives: The purpose of this study was to test the hypothesis that ADL disability affects the risk of onset of depressive symptoms and the role of possible confounding variables in this relation.

Methods: The data was obtained from the Beijing Longitudinal Study of Aging, a community-based cohort study of 3,257 elderly, aged 55 through 99 years, who were assessed four times at an 8-year interval. ADL disability and depressive symptoms were assessed by self-reported measures.

Results: Compared with non-disabled persons, the disabled persons were associated with an increased risk of onset depression (RR=7.28 for urban, R=2.22 for non-urban). Although an adjustment for possible confounders reduced the risk for depression association with the disability, the detrimental effect of disability remained significantly present. This excess risk is partly explained by the lower satisfaction with economy and poor perceived health status of the disabled elderly.

Conclusions: Disability among elderly may significantly increase the risk for depressive symptoms.

Key words: depression, ADL disability, elderly, cohort study, health surveys

Introduction

A number of experimental studies and a few observational studies have investigated the relation between physical health status and depressive symptoms, using samples drawn from clinically depressed patients (1–5) and from persons not clinically depressed (6–11). Although findings have not been entirely consistent, many studies have shown that ADL disability is consistently a more powerful predictor of depression in the elderly (12, 13). Most of these studies, however, examined small and highly select samples which may not have been representative of the general population and the several longitudinal studies did not exclude persons with depression at baseline (7), which do not allow us to draw firm conclusions about the association between disability and depression. Furthermore, it was found that different criteria of assessing depressive symptoms have produced different results depending on the samples studied and the methods used. For example, Gurling et al. (14) noted that studies using DSM-III-R diagnostic criteria (American Psychiatric Association, 1987) generally yield lower prevalence rates for major depression disorders

in elderly populations. Studies (15–17) that focused on symptoms of depression reported a significantly higher prevalence than did studies using diagnostic procedures.

In the present study, depression symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D) (18), which was designed to measure symptoms of depression in community studies.

To assess the role of ADL disability in depressive symptoms, the effect of ADL disability on consequent depression during an 8-year period among Beijing community elderly, initially free of depression, was examined. Those with depressive symptoms at baseline were excluded. Recreational ADL disability was an independent predictor of depressive symptoms, and can give a clearer picture of the causal role that initial ADL disability may play in the development of depression. The impact of possible confounding variables was also explored in the association between ADL disability and consequent depressive symptoms in this study. Four main objectives were examined: I) Is there strong association between ADL disability and depression? II) Does this association change with topography? III) Does this association remain even after controlling for possible confounders? and IV) Which item of ADL disability is depressive symptoms most associated with?

Methods

Study population

Data for these analyses came from the Beijing Longitudinal

Received Apr. 23 2002/Accepted Jul. 12 2002

Reprint requests to: Jingmei JIANG

Department of Public Health, Kumamoto University, School of Medicine, 2-2-1 Honjo, Kumamoto 860, Japan

TEL: +81(96)373-5112, FAX: +81(96)373-5113

E-mail: Jiang@kaiju.medic.kumamoto-u.ac.jp

Table 1 Participants in each follow up survey of Beijing elderly

	1992		1994		1997		2000
Invited (survivors of original cohort), No	1,680		1,477		1,131		917
Deceased between two interviews, No		124		199		176	
Missing (refused or moved from Interview area), No		79		147		38	
No. (elderly who participated in all surveys)	917		917		917		917

Study of Aging (BLSA) (19), a prospective cohort study of elderly living in the community. The sampling and data collection procedures were described in detail elsewhere (20). Briefly, in the autumn of 1992, a random sample of all community-dwelling persons aged 55 years and over was recruited (The response rate was 91.2%). In the autumn of 1994, 1997, and 2000, all survivors of this cohort were contacted for re-examination. The participants received a questionnaire covering a wide range of psychosocial and health-related issues, which was filled out at their homes and verified by trained interviewers at the same time. For illiterate elderly, the questionnaire was completed with the help of the interviewers.

The BLSA sample covered different residential conditions of Beijing. The sample was stratified in terms of gender and age, from 55 to 75 years (in five year cohorts) and over 80, forming six age groups of approximately equal size. The distribution of educational categories of the final sample was found to be consistent with that of older populations in Beijing obtained from the Fourth National Census Data of China.

Of the 3,257 persons interviewed at baseline, those who had depressive symptoms ($n=370$, 11.4%) were excluded from the study population. From the remaining 2,887 subjects, 1,207 (37.1%) were excluded because of missing measures of depressive symptoms. The analytic cohort study for prospective analysis thus consisted of 1,680 subjects (63.5% from urban areas and 36.5% from non-urban areas) from the eligible study population who had completed the measures of physical activity and depressive symptoms and at follow up (Table 1).

Measurement of depression

The outcome for this study was depression symptoms measured using the Center for Epidemiologic Studies Depression Scale (CES-D). It has 20 items with a score range of 0 to 60, to request the frequency with which a given symptom was experienced during the previous week. Scoring for positively worded items has been reversed so that high scores represent higher levels of depressive symptoms. In this study, the standard cut-off of 16 or greater from a total possible score of 60 was used as the measure of depressive symptoms, which is the most commonly used for screening purposes in general populations.

Measurement of ADL disability

The independent variable of interest was ADL disability which was assessed by the twelve-item Activities of Daily Living scale (i.e., feeding, grooming, dressing, transferring, bathing, and moving about inside the home, cooking, managing money, taking a bus, shopping, walking 300 meters, walking up and down stairs) (21). The first six items were identified as Basic Activities of Daily Living (BADL), and the remaining were the Instrumental Activities of Daily Living (IADL). For subsequent analyses, the BADL and IADL subscales were combined to form of a summary measure which was labeled as ADL, because the BADL and IADL

items had high inter-item correlation and secondly the subscales possessed a hierarchical structure whereby IADLs are more complex activities than BADLs and hence tend to be lost before BADLs. The internal reliability for the combined scale was very high ($\alpha=0.94$).

Possible confounding variables

The analysis took into account a number of possible confounding variables (sociodemographic characteristics) in the relation between ADL disability and subsequent depressive symptoms. Variables assessing sociodemographic status included age, gender, marital status, education, economic status and self-perceived physical health. Marital status, in this study, was treated as a dichotomous variable: (a) married, and (b) unmarried. The unmarried group include separated, widowed, divorced, and those who remained unmarried. Since most elderly had no or only a little income, economic status was assessed by the self-perceived answer of the individual, whether he or she felt satisfied, normal, or unsatisfied with their economic status. To avoid the differences in the medical conditions and diagnosis criteria about chronic conditions among areas, self-perceived physical health (22) was used to assess the health status among older persons instead of chronic conditions. In the sequence analyses, considering the degree of economic and educational level in rural and mountainous areas to be more or less equal, the rural and mountainous group were combined into a single group, namely non-urban.

Statistical methods

The Statistical Package for the Social Sciences (SPSS, version 10.0) was used for all analyses, χ^2 statistics was used to compare the characteristics of ADL disability among the different subgroups. Multivariate logistic regression models were used to adjust the effect of disability for possible confounding variables.

Results

The mean age of the older persons at baseline was 69.15 years ($SD=8.50$), with a range of 55 to 92 years. Subjects were predominantly urban elderly (63.5%), and most (51.7%) were male. Of them, 49.2% were illiterate and 31.2% were unmarried. Baseline ADL disability was 9.2% and greater disability was found in non-urban (14.2%) than in urban subjects (6.4%).

The distribution characteristics of older persons on ADL disability at baseline are depicted in Table 2, stratified by region. Both urban and non-urban areas show compositional changes among each subgroup out of disability trends within a multivariate framework. Disabled persons were more likely to be older, female, unmarried, and were less educated. For the economic status and self-perceived health groups, disabled persons were more often present in the subgroups of those who were not satisfied with their economic status and those who had poor self-perceived health status. This trend was more significant in non-urban than in urban

Table 2 Characteristics of subjects on disability[†] by region (1992)

	Urban (n=1067)			Non-urban (n=613)		
	n	(%)	ADL disability, %	n	(%)	ADL disability, %
Age group, y						
55–64	353	(33.1)	1.1**	225	(36.7)	4.4**
65–74	380	(35.6)	3.4	224	(36.5)	10.7
75+	334	(31.3)	15.3	164	(26.8)	32.3
Gender						
Male	540	(50.6)	4.3**	328	(53.5)	12.5**
Female	527	(49.4)	8.5	285	(46.5)	16.2
Marital States						
Married	745	(69.8)	3.5**	395	(64.4)	9.9**
Unmarried	322	(30.2)	13.1	218	(35.6)	22.0
Education						
Illiterate	359	(33.6)	11.1**	468	(76.3)	16.0**
Primary	355	(33.3)	5.9	135	(22.0)	8.9
Secondary and above	353	(33.1)	0.2	10	(1.6)	0.0
Economic States						
Satisfied/Normal	895	(83.9)	6.6*	498	(81.3)	14.0**
Unsatisfied	172	(16.1)	10.3	115	(18.7)	22.1
Perceived physical health						
Excellent/good	531	(49.8)	4.5	367	(59.9)	12.8**
Fair/poor	536	(50.2)	8.2	246	(40.1)	16.2

* compared among each stratified group $P < 0.05$.** compared among each stratified group $P < 0.05$.[†] disability proportion among each stratified group.**Table 3** Cumulative percentages of elderly developing depressive symptoms during 8 years of follow up by ADL disability

	Year of follow up					
	1994		1997		2000	
	Sample n	Depression %	Sample n	Depression %	Sample n	Depression %
Urban						
Non-disabled	907	3.6	616	10.3	515	11.7
Disabled	38	19.6	99	30.6	86	28.1
P for difference		<0.001		<0.001		<0.001
Non-urban						
Non-disabled	485	13.1	280	27.2	202	26.9
Disabled	47	33.0	136	48.7	114	55.4
P for difference		<0.001		<0.001		<0.001

areas.

Table 3 shows the cumulative percentages of older persons who developed depressive symptoms during the 8-year follow up. It was seen that significantly more disabled persons, in both areas, developed depressive symptoms than non-disabled persons at each interview. The difference in the percentages in depressive symptoms between disabled and non-disabled persons was 16.0% in 1994, 20.3% in 1997, 16.4% in 2000 for urban and 19.9%, 21.5%, 28.5% for non-urban areas, respectively ($P < 0.001$).

Table 4 shows the relative risks for developing depressive symptoms during the 8 years follow-up period by disability and other possible confounders using unadjusted logistic regression. In these analyses, there was a strong trend that increased ADL disability would significantly increase depressive symptoms. The risk for depression associated disability was 7.28 (95% CI=2.72, 19.53) for urban and 2.22 (95% CI=1.03, 4.79) for non-urban areas. All possible confounding variables studied in both areas showed the same trends in the risk for depressive symptoms.

Gender, economic status and self-perceived physical health were significantly associated with risk for depressive symptoms: being female (only in urban areas), low economic satisfaction and poor-perceived health increased the risk for depressive symptoms. On the other hand, age, marital status and education, in this study, did not increase the risk for depressive symptoms.

To identify the influence of possible confounders on the relation between disability and depression, a multivariate logistic regression model was constructed in which confounding variables for depression were controlled as covariates. When all confounding variables were adjusted, the risk associated with disability declined to 6.98 (95% CI=2.63, 18.54) for urban and 2.21 (95% CI=1.03, 4.72) for non-urban areas.

To explore which item of ADL disability depressive symptoms was most associated with, multivariate logistic regression analyses was used. Items as a factor entered in the model separately and possible confounders as covariates were controlled (Table 5). In general, IADL disability was associated with a higher

Table 4 The unadjusted relative risk for developing depressive symptoms during 8 years of follow up by ADL disability and other characteristics

Characteristics	Depressive symptoms			
	Urban (n=601)		Non-urban (n=316)	
	RR	(95% CI)	RR	(95% CI)
ADL disability				
Yes	7.28	(2.72, 19.53)	2.22	(1.03, 4.79)
Age group, y				
<75	ref		ref	
≥75	0.89	(0.35, 2.27)	1.12	(0.48, 2.61)
Gender				
Male	ref		ref	
Female	3.47	(1.29, 9.35)	1.94	(0.80, 4.74)
Marital States				
Married	ref		ref	
Unmarried	0.64	(0.25, 1.67)	0.60	(0.26, 1.38)
Education				
Secondary and above	ref		ref	
Primary	1.48	(0.54, 3.99)	0.17	(0.02, 1.93)
Illiterate	0.86	(0.26, 2.78)	0.31	(0.03, 3.39)
Economic States				
Satisfied	ref		ref	
Normal	1.24	(0.34, 4.62)	3.87	(1.38, 10.84)
Unsatisfied	8.26	(3.59, 18.19)	9.34	(3.36, 20.99)
Perceived physical health				
Excellent/Good	ref		ref	
Fair/Poor	2.53	(1.04, 6.19)	2.39	(1.30, 4.37)

risk (RR=4.96) for depression than that associated with BADL disability (RR=3.56). All items of ADLs studied were significantly associated with different degree of variances with risk for depressive symptoms. In BADLs, three most basic items (getting in and out off bed, feeding and grooming) were strongly associated with these risks for depression (RR=7.44, 6.13, 6.07, respectively). In IADLs, the items which connected mobility (walking 300 meters, walking up and down stairs and shopping) were significantly associated with risk for depression. The relative risk associated with disability for depression were RR=5.44, RR=4.84 and RR=4.71, respectively.

Discussion

Although gerontologists have become increasingly appreciative of the association between ADL disability and depressive symptoms in older persons, understanding the causal relation in community-based data is a complex task (22, 6).

To obtain a more complete understanding of the effect of ADL disability on depression, we used the data from the Beijing Longitudinal Study of Aging which offered a number of advantages for these analyses: (a) The data was drawn from a population-based cohort study which can reflect substantial socio-demographic and region diversity. (b) The selection criteria for this study resulted in a baseline cohort of elderly free of depressive symptoms, which can provide a “clearer” picture of the effect of disability on depression, since the possible confounding effects of depression were reduced. (c) The assessment of depressive symptoms within a relatively large cohorts population allows for validity control of possible confounders.

This study provides evidence that ADL disability significantly increases the risk for subsequent depressive symptoms. At each follow-up interview, the depressive risk associated disability (in both urban and non urban areas) was significantly higher than those associated with most other sociodemographic factors (data not shown). Although adjustment for possible confounders reduced the risk for onset depression associated disability, the detrimental effect of disability remained extant during all interviews.

Disability in older persons increased the risk of subsequent depressive symptoms by 7.28 folds in urban areas and 2.22 folds in non-urban areas compared with non-disabled persons after 8 years follow up. Some sociodemographic characteristics play an important role in explaining part of the risk for depression associated disability. Disabled persons were more likely to be female, remain unsatisfied with their economic status and have poor self-perceived health status than their non-disabled peers. These characteristics confound the association between disability and depression, inasmuch as accounting for these factors significantly reduced the excess risk for depression among disabled persons. In addition, although older age, unmarried, and less educated were more often present in disabled persons, these characteristics were not risk factors for depressive symptoms and hence they did not increase the risk of depression in disabled elderly persons.

Although these findings may reflect an important impact of ADL disability on depressive symptoms, several alternative explanations are possible.

At onset, many questions have been raised concerning the validity of assessing depressive symptoms among the elderly using the same criteria and/or measures that are applied to younger subjects, such as the CES-D scale used in this study. One particular concern is that CES-D items include physiologic or somatic factors which depend to a large extent on a person's physical activity (“poor appetite,” “trouble concentrating,” “everything an effort,” and “could not get going”) (12). Thus, older persons might score higher on a scale of depressive symptoms not because they

Table 5 Each item of ADL disability associated relative risk for developing depressive symptoms After 8 years of follow up, adjusted for confounding variables

	Depressive symptoms (n=601)			Depressive symptoms (n=316)	
	RR	(95% CI)		RR	(95% CI)
BADL disability	3.56	(1.89, 6.74)	IADL disability	4.96	(1.98, 12.39)
Feeding	6.13	(1.27, 27.21)	Cooking	3.40	(1.83, 6.32)
Grooming	6.07	(1.24, 29.76)	Managing money	2.97	(1.49, 5.94)
Dressing	4.82	(1.32, 17.60)	Taking a bus	4.00	(2.14, 7.46)
Getting in and out off bed	7.44	(2.00, 27.85)	Shopping	4.71	(2.54, 8.75)
Bathing	4.12	(1.92, 8.79)	Walking 300 meters	5.44	(2.88, 10.30)
Moving about inside room	5.54	(1.61, 19.06)	Up and down stairs	4.84	(2.57, 9.12)

actually have more dysphoria or feelings of depression or sadness, but because their declining physical condition and perhaps the aging process itself increases their likelihood of reporting more problems than younger people. In this study, the items of IADLs which connected mobility closely (walking 300 meters, walking up and down stairs and shopping) had higher risks for depression compared with any other items. Whether this artificial relation between IADL items and CES-D items magnified the effect of depression needs further evaluation for full clarification.

Further, in this study, older persons living in the non-urban area had a higher prevalence of disability and depression, but they had a lower risk for depression associated with disability compared with their urban peers. One important explanation for this may be because the difference between urban and non-urban subjects was high in the level of economy and education. A total of 76.3% of the elderly who lived in non-urban areas were illiterate and their low economic level made them, more or less, adapt to this way of life. Their perception of happiness and concept of a happy life are different from urban elderly. Therefore, although they were disabled, it had less impact on their psychology.

Another point worth mentioning is that this study use samples at follow up that included only survivors, those who died between two interviews could not be analyzed because some information could not be acquired about whether they had developed depression before death. However, it is possible that disabled persons are more likely to have died before the next interview than non-disabled persons. During 8 years, the mortality was 73.3% among disabled persons which was significantly higher than that of non-disabled persons (28.2%) and greater than 80% of this mortality among disabled persons occurred in the first 5 years. This could probably partly explain the reason why the cumulative percentages of depression decreased from 1997 to 2000 in urban

areas (Table 3).

Finally, this cohort study consisted of depressive symptoms rather than depression diagnoses. Previous findings (21) suggested that diverse depressive syndromes occur in community populations and that the epidemiological dimensions of these syndromes also may differ. In addition, evaluating depressive symptoms at one point in time would appear to increase the risk for depressive symptoms an average of eight years later. Furthermore, the present results might be biased if there were some confounding factors associated with both ADL disability and depressive symptoms that we were not able to measure.

Regardless of factors which need further investigation before drawing a conclusion, the identification of disability as a risk factor for depression in older persons is important. Although relatively prevalent in older persons, depressive symptoms often go unrecognized or are not taken seriously by clinicians and family members (23). The present analyses provide further evidence that prevention or reduction of ADL disability should be considered an important point of intervention in the medical care of depressed elderly subjects.

Acknowledgements

The project was supported by United National Population Fund (UNFPA, CPR/90/P23), and by United National Development Program Fund (CPR/96/301).

The efforts of the fieldwork team of students of Capital University of Medical Science, Beijing, China and the cooperation of the participants are gratefully acknowledged.

The first author thanks for the invitation of the School of Medicine, Kumamoto University, Japan for cooperation study.

References

- (1) Broadhead WE, Blazer DG, George LK, Tse CK. Depression, disability days, and days lost from work in a prospective epidemiologic survey. *JAMA* 1990; 264: 2524–2528.
- (2) Morgan WP. A pilot investigation of physical working capacity in depressed and non-depressed psychiatric males. *Rec. Q.* 1969; 40: 859–861.
- (3) Ormel J, Von Korff M, Van den Brink W, Katon W, Brilman E, Oldehinkel T. Depression, anxiety, and social disability show synchrony of change in primary care patients. *Am. J. Public Health* 1993; 83: 385–390.
- (4) Stern M, Cleary P. National exercise and heart disease project: psychosocial changes observed during a low level exercise program. *Arch. Intern. Med.* 1981; 41: 1463–1467.
- (5) Von Korff M, Ormel J, Katon W, Lin EH. Disability and depression among high utilizers of health care. A longitudinal analysis. *Archives of General Psychiatry* 1992; 49: 91–100.
- (6) Berkman LF, Berkman CS, Kasl S, Freeman DH, Jr., Leo L, Ostfeld AM, Cornoni-Huntley J, Brody JA. Depressive symptoms in relation to physical health and functioning in the elderly. *Am. J. Epidemiol.* 1986; 115: 684–694.
- (7) Brenda WJ, Penninx H, Leveille S, Ferrucci L, Jaques Th. M, van Eijk JT, Guralnik JM. Exploring the effect of depression on ADL disability: Longitudinal evidence from the established populations for epidemiologic studies of the elderly. *Am. J. Public Health* 1999; 89: 1346–1353.
- (8) Bruce ML, Seeman TE, Merrill SS, Blazer DG. The impact of depressive symptomatology on ADL disability: Mac Arthur studies of successful aging. *Am. J. Public Health* 1994; 84: 1796–1799.
- (9) Gallo JJ, Rabins PV, Lyketsos CG. Depression without sadness: functional outcomes of nondysphoric depression in later life. *J. Am. Geriatr. Soc.* 1997; 45: 570–578.
- (10) Kennedy GJ, Kelman HR, Thomas C, Wisniewski W, Metz H, Bijur PE. Hierarchy of characteristics associated with depressive symptoms in an urban elderly sample. *Am. J. Psychiatry* 1989; 146: 220–225.
- (11) Turner RJ, Noh S. ADL disability and depression: a longitudinal analysis. *J. Health Soc. Behav.* 1988; 29: 23–37.
- (12) Lisa FB, Cathy SB, Stanislav K, Daniel H, Freeman JR, Linda L, Adrian MD, Joan CH, Jacob AB. Depressive symptoms in relation to physical health and functional in the elderly. *Am. J. Epidemiol.* 1986; 124: 372–388.
- (13) Mary EF, Ben ZL, Evek M, Andrew LD, David BL, Lenore SR. Physical activity and depressive symptoms: The Nhanes I Epidemiologic Follow-up Study 1988; 128: 1340–1349.
- (14) Gurling D, Hupper F, Brayne C. Depression symptoms in the very elderly-their prevalence and significance. *Int. J. Geriatric Psychiatry* 1995; 10: 497–504.
- (15) Bland, R. Newman, H. Orn. Prevalence of psychiatric disorders in the elderly in Edmonton. *Acta Psychiatrica Scandinavica*

- 1988; 77: 57–63.
- (16) Kay DW, Henderson AS, Scott R, Wilson J, Rickwood D, Grayson DA. Dementia and depression among the elderly living in the Hobart community: the effect of the diagnostic criteria on the prevalence rates. *Psychological Medicine* 1985; 15: 771–788.
- (17) Livingston G, Hawkins A, Graham N, Blizard B, Mann A. The Gospel Oak Study: prevalence rates of dementia, depression and activity limitation among elderly residents in inner London. *Psychological Medicine* 1990; 20: 137–146.
- (18) Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1997; 1: 385–401.
- (19) Tang Z, Meng C, Wu XG. Report of Beijing longitudinal study on aging. *J. Capital. Univ. Med. Sci.* 1995; 16: 1995.
- (20) Tang Z, Wang HX, Meng C, Wu XG, Kzerstin E, Bengt W, Pei JJ. The prevalence of functional disability in activities of daily living and instrumental activities of daily living among elderly Beijing Chinese. *Archives of Gerontology and Geriatrics* 1999; 29: 115–125.
- (21) Manton KG, Corder LS, Stallard E. Estimates of changes in chronic disability and institutional incidence and prevalence rate in the U.S. elderly population from the 1982, 1984, and 1989 national long term care survey. *Journal of Gerontol. Social Science* 1993; 48: S153–S166.
- (22) Marianne Malmstrom, Jan Sunquist, Sven-Erik Johansson. Neighborhood environment and self-reported health status: A multilevel analysis. *Am. J. Public Health* 1999; 89: 1181–1186.
- (23) Blazer D, Swartz M, Woodbury M, Manton KG, Hughes D, George LK. Depressive symptoms and depressive diagnoses in a community population. Use of a new procedure for analysis of psychiatric classification. *Archives of General Psychiatry* 1988; 45: 1078–1084.
- (24) Golberg D, Eastwood R. Primary care and psychiatric epidemiology: the psychiatrists perspective. In Cooper B, Eastwood R, eds. *Primary health care and psychiatric epidemiology*, London: Routledge 1992; 44–58.