

(8)食べられる食品の固さについてお聞きします。ひとつの番号に○をつけて下さい。

(8-1) 固い食品を噛めますか。

1. 左右両方の歯で噛める	2. 左右どちらかの歯でしか噛めない
3. いいえ	

(8-2) 「肉類が噛みにくい」という理由で食べる量が減ってきていますか。

1. はい	2. いいえ
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問23. 次にあげる食品を普通に噛み切れますか（食べられますか）。

(1)～(5)のそれぞれについて、いずれかひとつの番号に○をつけて下さい。

(1) 「さきいか」、「たくあん」くらいの固さ————→	1 はい	2 いいえ
(2) 「生にんじん」、「セロリ」くらいの固さ————→	1 はい	2 いいえ
(3) 「油あげ」、「白菜つけもの」くらいの固さ————→	1 はい	2 いいえ
(4) 「ごはん」くらいの固さ————→	1 はい	2 いいえ
(5) 「バナナ」くらいの固さ————→	1 はい	2 いいえ

薬についてお聞きします

問24. 薬を飲む際に問題を感じることはありますか。

いずれかひとつの番号に○をつけて下さい。

1. 問題なく服薬できる → 問25へお進みください
2. 問題がある



付問1. 「2. ある」に○をつけた方は、どのような問題を感じていますか。

あてはまるものすべての番号に○をつけて下さい。

1. 粉薬が飲みにくい
2. 薬が飲みにくく、時間がかかる
3. 薬が喉にからんだり、時々むせたりすることがある

問25. 「お薬手帳」をお手元にご用意ください。

内容を確認しながらお答えいただく設問です。

「定期的に内服している薬」についてご記入ください。

【記入方法】

(1) 内服薬の種類：薬の名称だけ記入して下さい。量・形状などは記入不要です。

(2) 内服薬の数：(1)で回答した内服薬が何種類か数字で記入して下さい。

(3) その他の薬：インスリン（注射薬）などがあれば記入して下さい。

※外用薬（軟膏や湿布剤、点眼薬や点鼻薬など）は記入する必要はありません。

※ドラッグストアで購入した市販薬やサプリメントは除きます。

※わからない場合は、全て記入して下さい。

次頁にお進みください。

【お薬手帳の例】

【回答の例】

〇〇 〇〇様
12/09/01 〇〇クリニック Dr:〇〇 〇〇

① **グルコバイ錠 1000mg** 1日3錠 食後の血糖上昇を抑える薬
1日3回 毎食直前 14日分

② **アマリール 3mg 錠** 1日1錠 血糖を下げる薬

③ **ヒューマログミックス 50** 全1キット 血糖を下げる注射薬 糖尿病改善の注射薬
1日1回(朝食直前10単位)

④ **リンデロン VG 軟膏** 10g 右ひじ 1日2回

⑤ **ロキソニンパップ** 5パック 貼付

千葉県柏市〇〇1-1-1 〇〇薬局 薬剤師:〇〇 〇〇

薬の名称のみ記入

(1) 内服薬の種類

- ・グルコバイ
- ・アマリール

(2) 内服薬の数
2種類

(3) その他の薬

- ・ヒューマログミックス

外用薬のため記入不要

【回答欄】 ※記入する薬がない場合は、「なし」と記入して下さい。

(1) 「お薬手帳」から、現在内服している薬の名称（種類）を記入して下さい。

内服薬の名称（種類）：

(2) (1) で答えた内服薬は何種類ですか。数字を記入して下さい。

※ない場合は「0」と記入して下さい。

現在内服している薬は 種類

(3) (1) の他に、注射薬などがあれば薬の名称を記入して下さい。

その他の薬：

ご家族やご友人などについてお聞きします

問26. あなたのご家族についてお聞きします。

同居している家族の方はいらっしゃいますか。いずれかひとつの番号に○をつけて下さい。

1. はい 2. いいえ

※いわゆる二世帯住宅や同じ敷地内で別の棟に住んでいる場合も含めて下さい。

付問 1. あなたは普段、家族とどのくらい話をしていますか。

1. とても話をしている 2. まあまあ話をしている 3. どちらともいえない
4. あまり話をしていない 5. 全く話をしていない

問27. あなたは現在結婚していますか。

1. 結婚している 2. 離婚している 3. 別居している
4. 死別した 5. 結婚したことがない

問28. あなたは、ふだんの生活で、家族以外に若い世代（30代未満）との交流の機会がありますか。

1. よくある 2. たまにある 3. ほとんどない 4. 全くない

問29. あなたは、次にあげることについてどのくらい満足していますか。

	とても満足	まあまあ満足	えど な いら とも い	てあ いま なり 満足 し	しま てっ いた なく 満足	いな い
(1) 家族 →	1	2	3	4	5	6
(2) 友人 →	1	2	3	4	5	6

問30. 現在の家族や友人についてうかがいます。

(1) から (6) について、該当する人数の番号にひとつだけ○をつけてください。

(1) 少なくとも月に1回以上、顔を合わせる機会や消息を取り合う <u>親戚や兄弟</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上
(2) 少なくとも月に1回以上、顔を合わせる機会 や 消息を取り合う <u>友人</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上
(3) あなたが個人的なことでも、気兼ねなく話すことができる <u>親戚や兄弟</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上
(4) あなたが個人的なことでも、気兼ねなく話すことができる <u>友人</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上
(5) あなたが手助けを求めることができるような、身近に感じる <u>親戚や兄弟</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上
(6) あなたが手助けを求めることができるような、身近に感じる <u>友人</u> は何人位いますか	1. 0人	2. 1人	3. 2人	4. 3~4人	5. 5~8人	6. 9人以上

次に、家族や友人などと会う頻度についてお聞きます。

(1) と (2) について、該当する番号にひとつだけ○をつけてください。

	ほぼ毎日	週に2、3回	週に1回くらい	月に1、2回	年に数回	ほとんどない
(1) 友人と会う機会はどれくらいありますか→	1	2	3	4	5	6
(2) 別居の家族や親せきと会う機会はどれくらいありますか→	1	2	3	4	5	6

普段のご活動についてお聞きします

問31. あなたは、次にあげる会や組織にはいつていますか。

(1) 老人会・老人クラブ	→	1 はい	2 いいえ
(2) (老人会以外の)健康・スポーツのサークル・団体	→	1 はい	2 いいえ
(3) (老人会以外の)学習・教養のサークル・団体	→	1 はい	2 いいえ
(4) (老人会以外の)それ以外の趣味のサークル・団体	→	1 はい	2 いいえ
(5) 町内会・自治会	→	1 はい	2 いいえ
(6) ボランティア団体	→	1 はい	2 いいえ
(7) デイケア	→	1 はい	2 いいえ
(8) その他	→	1 はい	2 いいえ

問31の(1)~(8)いずれかを行っている方にお聞きします。

付問. 活動への出席頻度はあわせるとどれくらいですか。

- | | | |
|------------|------------|------------|
| 1. ほぼ毎日 | 2. 週に2, 3回 | 3. 週に1回くらい |
| 4. 月に1, 2回 | 5. 年に数回 | 6. ほとんどない |

問32. あなたは、現在次のような活動を行っていますか。行っている場合、主に1人で行っていますか、それとも他の人と行っていますか。いずれかひとつの番号に○をつけて下さい。

	行 っ て い な い	行 主 っ に て 1 人 で	行 主 っ 緒 に 誰 か と い る
(1) 趣味（テレビ、囲碁、読書、園芸、手芸、釣りなど）	1	2	3
(2) 学習活動（語学学習など）—————→	1	2	3
(3) 健康・スポーツ活動（ゴルフ、体操、ダンスなど）→	1	2	3
(4) 買い物（家事のための買い物を除く）—————→	1	2	3



問32の(1)～(4)いずれかを行っている方にお聞きします。

付問1. そのうち、あなたが、最も力を入れて参加している活動はどれですか。

問32(1)～(4)いずれかの番号でお答えください。

付問2. あなたは、付問1の、最も力を入れている活動にどのくらい参加していますか。

1. ほぼ毎日	2. 週に2, 3回	3. 週に1回くらい
4. 月に1, 2回	5. 年に数回	6. ほとんどない

お住まいの地域の人々や環境についてお聞きします

問33. お住まいの地域（同じ町内会位の範囲）の人々について、どのように思っていますか。

(1)～(5)について、最も近いと思われる番号にひとつだけ○をつけてください。

	そう思う	どちらかというところ そう思う	どちらとも いえない	どちらかというところ そう思わない	そう思わない
(1) お住まいの地域の人々は信頼できる	1	2	3	4	5
(2) お住まいの地域の人々は結束が強い	1	2	3	4	5
(3) お住まいの地域の人々は喜んで近所の人を手助けする	1	2	3	4	5
(4) お住まいの地域の人々はお互いにあまりうまくいっていない	1	2	3	4	5
(5) お住まいの地域の人々は同じ価値観をあまり共有していない	1	2	3	4	5

問34. お住まいの地域（同じ町内会位の範囲）の人々は、次のようなことをすると思いますか。

(1)～(5)について、最も近いと思われる番号にひとつだけ○をつけてください。

	そう思う	どちらかというところ そう思う	どちらとも いえない	どちらかというところ そう思わない	そう思わない
(1) お住まいの地域の人々は、学校をさぼり路上でたむろしている子供を見たら注意する	1	2	3	4	5
(2) お住まいの地域の人々は、建物に落書きしている子供を見たら注意する	1	2	3	4	5
(3) お住まいの地域の人々は、大人に失礼な態度をとる子供を見たら注意する	1	2	3	4	5
(4) お住まいの地域の人々は、自分の家の前で突然けんかが始まったら止めに入る	1	2	3	4	5
(5) お住まいの地域の人々は、最寄りの集会所が閉鎖されそうになったら廃止されないよう行動する	1	2	3	4	5

さいごに

この質問票を記入したのはあなたご自身ですか。代理の方ですか。
いずれかひとつの番号に○をつけて下さい。

- | |
|---------------------------------------|
| <p>1. あなたご自身 2. 代理の方（家族・その他）</p> |
|---------------------------------------|

～お手数ですが、記入漏れがないか、今一度お確かめください～

調査票は検査当日に必ずご持参下さい。

長時間にわたり、ご協力どうもありがとうございました。

研究成果の刊行に関する一覧表

主任研究者

飯島 勝矢

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分担研究者

菊谷 武

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学会賞

名称: International Association for Disability and Oral Health (IADH Award)

受賞者氏名: 古屋裕康

年月日: 2014.10.4

受賞論文等の題名: Factors that influence oral resident bacterial count in healthy elderly persons

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森直治、東口高志、伊藤彰博、二村昭彦、渡邊哲也、石川敦子	がん患者におけるCT大腰筋面積測定の臨床的意義	静脈経腸栄養	29(5)	1211-1217	2014
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Eating alone asocial disengagement is strongly associated with depressive symptoms in Japanese community-dwelling older adults

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ABSTRACT

Objectives: Depression in later life poses a grave challenge for the aging countries. The reported key risk factors include social disengagement, but the lack of social companionship during mealtimes, namely eating alone, has not been examined extensively, especially in relation to living arrangement. Past studies on changes along geriatric trajectories in the association between social engagement and depression also remain inadequate. This study aims to examine the association between social engagement and depressive symptoms with a particular focus on eating alone and how the association changes along the aging and mental frailty trajectories. **Design:** A cross-sectional study. **Setting:** Kashiwa-city, Chiba-prefecture in Japan. **Participants:** 1,856 community-dwelling older adults. **Measurements:** The 15-item Geriatric Depression Scale was used to measure depressive symptoms. The indicators used to assess social engagement included eating alone, living arrangement, reciprocity of social support, social participation, social stressors and social ties. **Results:** Social engagement was significantly associated with depressive symptoms. Those who live with others yet eat alone were found to be at particular risk (Odds Ratio (OR)=5.02, 95% Confidence Interval (CI): 2.5-9.9 for young-old; OR=2.41, 95% CI: 1.2-4.8 for old-old). Younger and less mentally frail populations showed stronger associations. **Conclusion:** Eating alone was a key risk factor for depressive symptoms in community-dwelling older adults. The living arrangement in which they eat alone is important in identifying those with the greatest risk. Mental health management for older adults requires comprehensive assessment of their social relations that takes into account their companionship during mealtimes. Social preventive measures need to involve early interventions in order to augment their effectiveness against mental frailty.

KEY WORDS: eating alone, depressive symptoms, social engagement

INTRODUCTION

The problem of depression in later life has become a pressing global concern, as the population aging continues worldwide¹. It undermines well-being and quality of life (QOL) while adding to healthcare costs, with potential consequences on a wide range of health outcomes². The problem poses a grave socio-economic burden on aging countries, not least in Japan where the unprecedented level of aging threatens to undermine its social security system³. The prevalence of depression among community-dwelling older adults varies enormously and has been reported to be as high as 35%⁴.

The key reported predictors of depressive symptoms include female gender, cognitive and functional impairments, medical disorders, low level of education and social disengagement^{1, 5-10}. Social engagement is an 'umbrella concept for the various components of an individual's social behavior and social structure'¹¹ and its different aspects have consistently been found to predict mortality, disease outcomes, disability, cognitive decline as well as depressive symptoms¹²⁻¹⁶. While the conceptualization of social engagement lacks a strong consensus¹⁷, this should not be viewed as a weakness but as an invitation to explore its unexamined aspects in a search for the most relevant screening questions to identify older adults at risk¹¹. This study thus aims to examine new concepts and ideas that remain under-explored, especially in relation to depression.

One such aspect is the social behavior during mealtimes. Commensality i.e. the act of eating with others provides opportunities for social interactions and exchange of information and support by facilitating participation in shared social activities of mealtimes¹⁸. Eating alone deprives older adults such valuable social opportunities. Eating alone has been studied in relation to dietary intake, but research in relation to depression and wider health outcomes remains limited¹⁹. To our knowledge, none has examined its association with depression in combination with other components of social engagement nor investigated it in relation to the living arrangement. Living alone is often cited as a key risk factor for older adults, as does the Ministry of Health, Labour and Welfare, Japan (MHLW), but eating alone is rarely discussed. A shared living arrangement may result in increased opportunities for commensality, but does not guarantee it^{18, 19}, requiring independent considerations.

Furthermore, past studies have not adequately examined how the association between social engagement and depression changes along geriatric trajectories such as aging and frailty. Frailty is not only a physical but a multidimensional concept²⁰ and mental frailty, one important dimension, may manifest as depressive states. The role of social engagement vis-à-vis depression is expected to change as older adults age or become more mentally frail, influencing the effectiveness of social intervention measures.

The purpose of the present study is two-fold. The first objective is to examine whether social engagement is associated with depressive symptoms with a particular focus on eating alone and its relation to the living arrangement. Secondly, effects of geriatric trajectories, namely aging and mental frailty trajectory on the above association are examined in order to better identify the most effective social intervention sites for depressive symptoms.

METHODS

Study design:

The study was cross-sectional.

Setting and Participants:

This study was based on data from 1,856 randomly selected community-dwelling older adults (independent or those requiring support), aged 65-94, who participated in the first year health assessment of a 3-year cohort study between 2012 and 2014 in Kashiwa city, Japan. A total of 2,044 persons participated in the assessment and 188 subjects were excluded due to missing items of data.

Measurements:

Depressive symptoms: The 15-item Geriatric Depression Scale (GDS) was used. Scores of ≥ 6 were defined as 'depressive symptoms'²¹, 6-9 as 'mild depression' and ≥ 10 as 'severe depression'⁴.

Social engagement: Seven components were assessed: (1) living arrangement; (2) eating arrangement; (3) reciprocal social support; (4) social participation; (5) social stressors; (6) social ties with family; (7) social ties with friends. Following questions were asked regarding each item: (1) Do you live with your family: yes or no? (No=living alone); (2) Do you eat your meals with anyone else, at least once a day: yes or no? (No=eating alone); (3) Do you give advice and a helping hand to your family or friends: yes or no? (No=low reciprocal social support); (4) Are you going out less frequently compared to last year: yes or no? (The Kihon Check List, MHLW) (No=fewer frequency of going out); (5) Did you experience any major changes in life in the past year, such as moving home, retirement, loss of relatives, financial troubles, troubles in the relationships with people: yes or no? (Yes=major change in life). For (6) and (7), the abbreviated Lubben Social Network Scale (LSNS-6) and its Family and Friends subscales^{22,23} were used. Living arrangement and eating arrangement were crossed to construct four dummy variables: 'Living & Eating alone', 'Living alone yet Eating with others', 'Living with others yet Eating alone' and 'Living & Eating with others' (reference).

Socio-demographic variables: Age and the years of education were included in the analysis as a continuous variable. Health literacy was measured by five items developed for Japanese subjects²⁴. Information on economic status was obtained as income ranking based on long-term care insurance premiums. Logistic regression was performed with the income ranking and depressive symptoms as the independent and dependent variables respectively. The odds ratios were plotted to observe changes in the trend and those with less than 1.4 million Japanese Yen per person were categorized as the 'low income' group.

Medical histories: Medical histories of hypertension, osteoporosis, cerebrovascular diseases, diabetes, heart diseases and malignant neoplasm were obtained through medical interviews by nurses.

Number of medications: The total number of oral medications was recorded as a continuous variable, as polypharmacy is known to be associated with increased depressive symptoms²⁵.

Physical health & functions: Instrumental Activities of Daily Living (IADL) was measured using the Tokyo Metropolitan Institute of Gerontology index of competence²⁶. Mobility was assessed by Life-Space Assessment^{27, 28}, measured with the Elderly-Status Assessment Set^{29, 30}. The highest level

of life-spaces (level 5) was used. To assess usual and maximum gait speeds, participants were instructed to walk over an 11-m course and the time spent in the middle 5m was recorded³¹.

Cognitive function: Mini-Mental State Examination (MMSE) was used and its score was included in the analysis as a continuous variable.

Oral health & functions: The Japanese version of the General Oral Health Assessment Index (GOHAI)^{32,33} was used to measure the oral health-related QOL. Numbers of remaining teeth were counted by dental hygienists. Occlusal force was assessed by Dental Prescale (Fujifilm).

Nutritional & dietary status: BMI was calculated by dividing the weight by the square of height. Food variety score was calculated from a ten-item questionnaire³⁴. Nutritional status was assessed by Mini-Nutrition Assessment-Short Form (MNA-SF), with scores ≤ 11 indicating possible malnutrition³⁵.

Statistical analysis:

Binomial multiple logistic regression analysis was performed with depressive symptoms as the dependent variable, stratified by the age groups (65-74 years old indicating 'young-old' and ≥ 75 years old indicating 'old-old'). Multinomial multiple logistic regression analysis was performed with different degrees of depressive states ('mild depression' and 'severe depression') as the outcome. The characteristics of the four groups by eating and living arrangement were also compared, to explore the reasons behind their differing associations with depressive symptoms. For continuous variables only, multiple comparison test (Dunnnett T3) was used to test whether there were significant differences between "Living with others yet Eating alone" and "Living & Eating with others". IBM SPSS statistics version 22 for Windows (IBM Japan) was used to perform statistical analysis. $P < 0.05$ was considered to indicate statistical significance.

Ethical considerations:

The study was approved by the Ethics Committee of the University of Tokyo. Data received for analysis had the participants' names substituted with ID numbers, and confidential information was excluded to ensure protection of personal information.

RESULTS

Sample characteristics:

Of the total 1,856 subjects (928 male and 928 female, mean age was 72.9 ± 5.5 years), 1,201 (64.7%) were young-old while 655 (35.3%) were old-old. 14.7% showed depressive symptoms (14.0% of young-old and 15.9% of old-old, 15.6% of women and 13.7% of men). 10.6% were living alone (8.1% of young-old and 15.1% of old-old, 15.4% of women and 5.7% of men). 14.6% were eating alone (11.1% of young-old and 21.1% of old-old, 17.9% of women and 11.3% of men). 6.0% were eating alone despite living with family members (4.2% of young-old and 9.2% of old-old, 5.2% of women and 6.8% of men).

Social engagement and depressive symptoms by age groups:

Table 1 shows the comparison of the geriatric characteristics between normal and depressed subjects for young-old and old-old respectively. Based on this result, logistic regression was performed to identify the key risk factors for depressive symptoms (Table 2). The variables independently associated with depressive symptoms for both age-groups were 'living with others yet eating alone', social participation (fewer frequency of going out), social stressors (major change in life) and social ties of friends, health literacy and GOHAI. Those unique to young-old were low reciprocal social support, social ties with family, low income, mobility and MNA-SF scores. Risk factor unique to old-old was the number of medications.

Social engagement and different degrees of depression:

Table 3 shows the comparison of the geriatric characteristics between 'normal', 'mildly depressed' and 'severely depressed' subjects. Based on this result, multinomial logistic regression was performed, as shown in Table 4. The variables independently associated with both degrees of depression were eating alone, social participation (fewer frequency of going out), social ties with friends, health literacy, the number of medications and GOHAI. Those unique for 'mild depression' were living alone, low reciprocal social support, social stressors (major change in life), social ties with family, age, low income and mobility. Risk factors unique for 'severe depression' were male gender, history of cerebrovascular diseases and MNA-SF scores.

Living arrangement and eating arrangement:

To examine further the role of eating alone and its potential risk factors, living arrangement and eating arrangement were crossed and the physical, mental, oral, cognitive, nutritional/dietary as well as social characteristics of the four resultant groups (Living & Eating alone (n=160), Living alone yet Eating with others (n=36), Living with others yet Eating alone (n=111), Living & Eating with others (n=1,549)) were compared. The results are shown in Table 5.

The subjects 'living with others yet eating alone' had the poorest scores of social ties with family and friends, years of education, health literacy, physical health & functions (normal and maximum gait speeds, IADL and mobility), cognitive function, oral health & functions (GOHAI, number of remaining teeth and occlusal force), nutritional and dietary status (MNA-SF and food variety).

Furthermore, greater proportion of those who 'live with others yet eat alone' live with their