

Recognition, Attitudes and Causal Beliefs regarding Dementia in Italian, Greek and Chinese Australians

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Key Words

Dementia · Alzheimer's disease · Racial and ethnic minorities · Stigma · Beliefs

Abstract

Background/Aim: To investigate recognition, attitudes and causal beliefs regarding dementia in Italian, Greek and Chinese Australians in comparison with 3rd generation Australians. Little is known about dementia literacy in these racial and ethnic minority groups. **Methods:** A cross-sectional telephone survey was conducted of 350 Italian, 414 Greek, 437 Chinese and 500 3rd generation Australians randomly selected from the telephone directory. **Results:** Third generation participants (85%) were more likely to recognize dementia symptoms in a vignette in comparison to Italian (61%), Greek (58%) and Chinese (72%) participants. Overall, the racial and ethnic minority groups had more negative attitudes about persons with dementia. The racial and ethnic minority groups were more likely to suggest old age and psychosocial risk factors caused dementia, whereas 3rd generation Australians were more likely to suggest brain disease. Differ-

ences between ethnic minority and 3rd generation groups remained after controlling for sociodemographic variables. There were differences between Italian, Greek and Chinese participants on markers of acculturation associated with knowledge and beliefs within each group. **Conclusions:** Racial and ethnic minority groups have poor dementia literacy in comparison to 3rd generation Australians. There is a need for dementia education targeted to and tailored for these groups.

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Australia has a multicultural population. In 2006, 24% of residents were born overseas, and 17% spoke a language other than English [1]. The biggest groups aged over 65 years and born in non-English speaking countries were from Italy (3.9% of all older Australians), Greece (1.9%), Germany (1.3%) and mainland China (1.0%). This reflects the patterns of migration to Australia. The earliest migrants arrived in the mid-1800s from England and Ireland. Then migrants arrived from Eastern and Southern Europe after World War II to work in agricultural and

manual labor positions. In the 1970s and 1980s, skilled migrants arrived from Asia. In 2005, it was estimated that in Australia, 19,838 persons with dementia spoke European languages other than English, and 4,199 spoke Asian languages at home [2]. By 2020, projections of the Australian population suggest that 26,996 persons with dementia will speak European languages other than English, and that 7,662 will speak Asian languages [2].

Australians from racial and ethnic minority communities are less likely to use mental health and aged care services. They are less likely to consult general practitioners about psychological or social problems [3], have lower rates of specialist mental health service use [4], and have lower rates of voluntary hospitalization for mental illness [5]. This may be because persons from racial and ethnic minority underutilize services, or because the rates of mental illness are lower in these groups. The only study that examined attendance at memory clinics in Australia by patients with dementia from racial and ethnic minorities found that they presented at a later stage of their disease compared to those from English-speaking backgrounds [6]. Moreover, Asian language speakers were underrepresented at the memory clinic, relative to the size of their population in the area [6].

Dementia literacy refers to a person's knowledge regarding dementia, with greater dementia literacy shown to facilitate help-seeking [7–9]. Increased knowledge about an illness also decreases its stigma [10]. Individuals who are aware of the causes of a disorder are more likely to identify the disorder and seek earlier and appropriate treatment [11]. Limited research has been conducted on the dementia literacy of racial and ethnic minority groups. With a few recent exceptions [12], most of the research has been conducted in the United States, restricted to older samples and used predominantly qualitative methods. While interviews and focus groups provide rich descriptions and insights, results are not generalizable and do not provide a comparison with the English-speaking majority. Moreover, studies without comparison groups may also misattribute poor knowledge to culture or race without considering education and socioeconomic status [13]. Our previous Australian population-based study of dementia literacy found that age, gender and education were associated with level of knowledge and beliefs [14]. Studying dementia knowledge exclusively in older persons is an oversight, especially within migrant communities which tend to have strong family ties. Younger adults may need to be able to identify dementia symptoms and suggest or organize assessment, treatment and formal care.

Qualitative studies suggest that Italian, Greek and Chinese migrants have poor dementia literacy. The level of dementia knowledge of older Italian Australians tested on a short scale was low, and there was variable understanding of treatment and management options [15]. Chinese Americans have been reported to think that symptoms of dementia are caused by normal aging, negative environmental energies as a result of poor feng shui, retribution for individual or family sins, and an imbalance of yin and yang in the body and possession of evil spirits [8, 16]. Chinese Americans may view dementia symptoms as a mental illness which is shameful, or think that the condition is contagious [17]. There is a traditional Chinese belief that old people return to a childish state and, hence, dementia symptoms are normalized [18]. One study found that the difference in dementia knowledge between Asians and Anglo-Americans could be explained by the number of years English had been spoken [19].

The present study aimed to investigate recognition, attitudes and beliefs regarding the cause of dementia in Italian, Greek and Chinese Australians in comparison with 3rd generation Australians, and to investigate whether these differences could be accounted for by demographic or socioeconomic differences between groups. A secondary aim was to investigate whether dementia knowledge within racial and ethnic minority groups was associated with the level of acculturation.

The groups chosen for this survey represent the largest populations of older migrant groups in Australia in which many members have poor or no English language skills. Both 1st and 2nd generation migrants were included. The Chinese sample was limited to those born in mainland China or with at least 1 parent born in mainland China, as this provides a clearly delineated cultural group. Australians of 3rd generation or greater are defined as an Australian born person with both parents also born in Australia. Twenty-nine percent of Australians fit this definition [1].

Methods

Ethics approval was obtained from the University of New South Wales and the Australian National University's Human Research Ethics Committees before commencement of the project. Completion of the telephone survey was taken as an indication of informed consent. Focus group members provided written informed consent.

Survey Development

Survey questions were developed based on focus groups with 1st generation migrants held in Italian, Greek, Mandarin and Cantonese (n = 10 in each group), a literature review, and our previous dementia literacy survey [9]. These were refined after pilot testing and feedback from ethnic group representatives.

The survey questions were translated and checked by accredited translators in Italian, Greek and Chinese (the written script was the same for Mandarin and Cantonese) according to New South Wales Multicultural Health Communication translation standards [20]. Multilingual interviewers were trained to administer surveys using a computer-assisted telephone interviewing system.

Participant Recruitment

Lists of telephone numbers for persons with Italian, Greek or Chinese surnames were compiled from the Australian electronic telephone directory (the White Pages). The surname list method of recruiting ethnic minority groups has been found to have good sensitivity and excellent specificity for Chinese participants in Canada, America and Australia [21, 22], and has previously been used to recruit representative samples of Greek Australians [23, 24] and to target Italian Australians [25].

Letters in English and the appropriate native language were sent to randomly selected households from the Italian, Greek and Chinese telephone lists inviting participation in a study of the 'knowledge and beliefs about diseases and services that affect older people'. Households who did not decline via e-mail or a toll-free number were telephoned.

In order to obtain a sample of 3rd generation Australians, telephone numbers were randomly selected from the Australian White Pages and Italian, Greek and Chinese surnames were excluded.

Participants had to be at least 18 years of age and have the mental capacity to complete the survey as judged by the interviewer. Those included in racial and ethnic minority groups had to be born in Italy, Greece or mainland China (1st generation Australian), or have at least 1 parent born in those countries (2nd generation Australian). Participants in the 3rd generation Australian group had to be born in Australia and have both parents born in Australia (they might have had grandparents born overseas). State quotas were set to reflect the proportion of each ethnic group from each state of Australia [1].

Survey Questions

Participants were first read a vignette describing symptoms and behaviors of a person with dementia. The character had symptoms meeting Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV), criteria for Alzheimer's disease, with the exception of the exclusion of other medical conditions. The lead character in the vignette was described as having mild (50%) or moderate (50%) symptoms of dementia, and as being either male (50%) or female (50%). These 4 vignette variations were randomly assigned to participants. Gender and culturally appropriate first names were used.

Participants' recognition of dementia was determined by asking them what, if anything, was wrong with the lead character in the vignette.

Participants' attitudes toward people with dementia were assessed by asking them whether they agreed (coded 1) or disagreed (coded 2) with a series of statements (table 3).

Participants were told that experts in aging agree that the lead character in the vignette had symptoms of dementia. They were asked what they thought was the cause of dementia (free response).

Demographic Data

Data were collected on participants' age, gender, education, marital status, country of birth, and parents' countries of birth. Their occupation was coded using the Australian Standard Classification of Occupations [26] and the coding ranged from 1 ('managers and administrators') to 10 ('home duties'). Participants reported their main source of household income, which was coded as 1 = 'wage/salary', 2 = 'pension/government benefit', 3 = 'superannuation/self-funded retiree', 4 = 'other' and 5 = 'self-employed'. They also reported if they had known someone with dementia and, if so, if they had cared for someone with dementia.

There is no accepted gold standard measure of acculturation [27], so a number of indicators of acculturation were collected. Data were collected for self-rated English-language proficiency ('How well do you speak English?', coded 1 = 'very well', 2 = 'well', 3 = 'not well', 4 = 'not at all'), and languages other than English spoken at home. Participants were asked about the ethnic diversity of their social interactions within the community: 1 = 'almost always with your own ethnic group', 2 = 'mostly with your own ethnic group', 3 = 'equally with your own and with other ethnic groups', 4 = 'mostly with other ethnic groups' and 5 = 'almost always with other ethnic groups'. They were asked how often they used English-language newspapers, magazines and books (print media), and television and radio programs (broadcast media), which were coded 1 = 'daily', 2 = 'at least once a week', 3 = 'occasionally', 4 = 'rarely' and 5 = 'never'. Ethnic minority participants were also asked how often they used native language print and broadcast media.

Statistical Analysis

Statistical analyses were conducted with PASW 18. Multiple differences between Italian, Greek, Chinese and 3rd generation Australian groups were examined. However, given that many of the variables examined were correlated (e.g. attitude statements), Bonferroni corrections were not appropriate [28]. Hence, the p value for significance was set at 0.01 for all analyses.

χ^2 tests (categorical data) and t tests (continuous data) were used to examine pairwise differences between Italian, Greek and Chinese groups and 3rd generation Australians. Logistic regressions were used to examine whether pairwise differences remained significant after controlling for potential confounding or explanatory variables: group was entered in the 1st step; age and gender in the 2nd step; marital status, years of education, main household source of income and occupation in the 3rd step; having cared for or known a person with dementia in the 4th step; and ethnic diversity of social interactions and use of English language print and broadcast media in the 5th step.

The association between measures of acculturation and dementia recognition, attitudes and the 3 most commonly suggested causes was investigated within the Italian, Greek and Chinese groups separately using logistic regressions. Age, gender, education and experience with dementia were entered in the 1st step, and acculturation variables were entered forward stepwise in the 2nd step.

Results

Sample Characteristics

Three hundred and fifty Italian, 414 Greek, 437 Chinese and 500 3rd generation Australians were interviewed. This represents 41, 54, 39 and 26%, respectively, of potential participants contacted and invited to participate. Some persons who declined participation may have been ineligible for the study. Forty-five, 55 and 82% of Italian, Greek and Chinese interviews, respectively, were conducted exclusively in the participant's native language.

The characteristics of participants are presented in table 1. Compared to 3rd generation Australians, Italian and Greek Australians were older and less educated, while Chinese Australians were younger and more educated. Overall, more women (58%) participated than men (42%). However, the gender ratio did not significantly differ between the groups. Italians and Greeks were older ($t = 9.94$, $p < 0.001$; $t = 13.77$, $p < 0.001$), less educated ($t = -16.72$, $p < 0.001$; $t = -18.66$, $p < 0.001$) and less likely to be 1st generation migrants ($\chi^2 = 61.99$, $p < 0.001$; $\chi^2 = 45.06$, $p < 0.001$) than Chinese Australians. Twenty-nine percent of 3rd generation Australians had known and cared for a person with dementia compared to 14% of Italian, 18% of Greek and 12% of Chinese Australians.

Recognition of Dementia

Most participants (70%) recognized that the lead character in the vignette had dementia (see table 2). Third generation Australian participants were more likely to correctly label the symptoms of the character as having dementia in comparison to all 3 ethnic minority groups [OR (99% CI): 0.28 (0.18–0.44), 0.25 (0.16–0.39) and 0.42 (0.27–0.66), for Italian, Greek and Chinese, respectively], and these differences remained after controlling for sociodemographic variables [OR (99% CI): 0.48 (0.27–0.84), 0.55 (0.30–0.99) and 0.382 (0.22 to 0.67) for Italian, Greek and Chinese, respectively]. The differences also remained after controlling for experience with dementia in Italians (OR = 0.54, 99% CI = 0.30–0.97) and Chinese (OR = 0.46, 99% CI = 0.26–0.83), and in Chinese after controlling for ethnic diversity of social interactions and frequency of use of English print and broadcast media use (OR = 0.42, 99% CI = 0.19–0.90).

The gender or level of symptom severity of the lead character in the vignette did not affect whether dementia was recognized within each group; however, across the whole sample, mild dementia was less likely to be correctly labeled (68%) than moderate dementia (73%; $\chi^2 =$

6.53, $p = 0.006$). The interaction between group and symptom severity in the vignette on correct recognition was not significant (OR = 1.84; 99% CI = 0.87–3.91).

After controlling for age, gender, years of education and experience with dementia, self-rated English language proficiency was the only acculturation variable associated with correct recognition of dementia in Italian participants. Compared with those who reported not speaking English well at all, Italians who reported speaking English very well were more likely to correctly recognize dementia (OR = 12.85, 99% CI = 1.21–136.87). Use of English print media was the only acculturation variable associated with correct recognition of dementia in Greeks. Greeks who read English print media daily were more likely to correctly recognize dementia than those who never read English print media (OR = 4.38, 99% CI = 1.70–11.29). No acculturation variables were associated with correct recognition of dementia in Chinese Australians.

Attitudes towards Persons with Dementia

Overall, the racial and ethnic minority groups had more negative or pessimistic attitudes about persons with dementia (table 3). Compared to 3rd generation Australians, the ethnic minority groups were more likely to agree with the statements that dementia was a normal part of ageing, could have been avoided, and that persons with dementia could no longer enjoy life and should be cared for like a young child. These differences remained significant after controlling for sociodemographic variables, and most were significant after controlling for dementia experience, ethnic diversity of social interactions and frequency of English media use.

More Italians believed that the lead character's condition was a normal part of ageing than Greeks ($\chi^2 = 9.24$, $p = 0.002$) or Chinese ($\chi^2 = 10.65$, $p = 0.001$). More Chinese thought that the people like the lead character could have done something to avoid his/her conditions, could be helped, and should be cared for like a young child compared to Italians ($\chi^2 = 128.47$, $p < 0.001$; $\chi^2 = 44.32$, $p < 0.001$; $\chi^2 = 42.80$, $p < 0.001$) or Greeks ($\chi^2 = 96.84$, $p < 0.001$; $\chi^2 = 46.47$, $p < 0.001$; $\chi^2 = 59.22$, $p < 0.001$).

There were no acculturation variables associated with responses to statements 'a' to 'd' from table 3 within each racial and ethnic group after controlling for age, gender, years of education and experience with dementia. Being a 1st generation migrant was associated with greater likelihood of agreeing with statement 'e' that people like the lead character could no longer enjoy life in Italians, Greeks and Chinese [OR (99% CI): 0.38 (0.16–0.93), 0.27

Table 1. Sample characteristics by group (n = 1,701)

Characteristic $\bar{x} \pm$ SD (range) or % of sample	Italian (n = 350)	Greek (n = 414)	Chinese (n = 437)	3rd generation Australian (n = 500)
Years of age	58.4 ± 17.1 (18–89)*	61.4 ± 15.1 (18–94)***	46.6 ± 15.9 (18–89)***	55.8 ± 17.8 (18–94)
Women, %	57	57	61	57
Years of education	8.5 ± 4.1 (0–17)***	8.1 ± 4.0 (0–17)***	12.9 ± 3.4 (0–17)***	11.4 ± 2.9 (0–17)
ASCO occupation level	6.0 ± 3.2***	7.6 ± 2.4***	5.5 ± 3.0***	4.2 ± 2.9
Main type of income, %	***	***	***	
Wage or salary	50	36	83	52
Pension or government benefits	42	52	10	31
Superannuation or self-funded retiree	3	11	4	11
Self-employed	1	1	1	7
Other	4	1	2	0
Dementia experience, %	***	***	***	
Cared for someone with dementia	14	18	12	29
Known but not cared for someone with dementia	38	43	24	47
Has not known someone with dementia	48	40	64	24
Generation, %				
1st generation	62	67	87	–
2nd generation	38	33	14	–
Years lived in Australia	46.0 ± 11.5 (2–77)	46.7 ± 10.5 (3–88)	14.0 ± 9.4 (0–59)	55.8 ± 17.8
Proportion of education in Australia	46.1 ± 48.8	38.6 ± 48.1	7.3 ± 17.8	100.0 ± 0.0
Marital status, %	*	***	***	
Single	11	6	16	16
Separated or divorced	9	5	3	9
Widowed	20	17	4	12
Married or de facto	61	72	77	63
Ethnic diversity of social interactions, %	***	***	***	
Almost always with own ethnic group	16	41	37	20
Mostly own ethnic group	17	16	26	27
Equal mix of ethnic groups	39	28	24	53
Mostly not own ethnic group	18	11	10	≈ 0
Almost never with own ethnic group	9	5	3	≈ 0
Use of English language print media, %	***	***	***	
Daily	47	41	19	72
Weekly	19	14	16	17
Occasionally	13	8	23	5
Rarely	9	11	17	4
Never	13	27	25	2
Use of English language broadcast media, %		*	***	
Daily	88	83	31	83
Weekly	6	5	13	9
Occasionally	3	7	26	4
Rarely	3	3	15	4
Never	1	3	14	1
Use of native language print media, %				
Daily	10	12	27	–
Weekly	17	29	34	–
Occasionally	17	15	23	–
Rarely	17	14	9	–
Never	39	30	8	–
Use of native language broadcast media, %				
Daily	22	57	32	–
Weekly	11	8	20	–
Occasionally	15	7	22	–
Rarely	14	7	11	–
Never	38	20	16	–
Language other than English spoken at home, %	80***	85***	99***	4
Self-rated English proficiency, %				
Very well	51	42	6	–
Well	20	16	41	–
Not well	26	34	41	–
Not at all	3	9	12	–

ASCO = Australian Standard Classification of Occupations.

 χ^2 or t test significantly different between CALD group and 3rd generation Australians, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2. Responses (%) to the question on what was wrong with the person in the vignette, and differences between racial and ethnic minority groups and 3rd generation Australians

	Italian (n = 350)	Greek (n = 414)	Chinese (n = 437)	3rd generation Australian (n = 500)
Dementia/Demenza (dementia in Italian)	49	31 ^a	4 ^a	53
Alzheimer's disease	22 ^a	31 ^a	1 ^a	54
老年痴呆症 (dementia in Chinese)	0	0	69 ^a	0
Άνοια (dementia in Greek)	0	9 ^a	0	0
Use of any term for dementia	61 ^{a-d}	58 ^{a-c}	72 ^{a-e}	85
Memory problems	27 ^a	20 ^a	13	12
Old age	17	18	18	14
Mental illness or emotional problems	4	11	3 ^a	7
Depression	8	6	2 ^a	5
Don't know	7 ^a	5 ^a	6 ^a	1
Other	4 ^a	20 ^a	4 ^a	13

Percentages may exceed 100% as multiple responses were allowable.

^a Pairwise χ^2 significant difference to 3rd generation Australians.

^b Pairwise χ^2 significant difference to 3rd generation Australians after controlling for age and gender.

^c Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for education, income, occupation and marital status.

^d Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for dementia experience.

^e Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for community association, English print and broadcast media use.

Table 3. Proportions (%) of participants who agreed to attitudinal statements, and differences between racial and ethnic minority groups and 3rd generation Australians

	Italian (n = 350)	Greek (n = 414)	Chinese (n = 437)	3rd generation Australian (n = 500)
a I think the lead character's condition is a normal part of ageing	63 ^{a-e}	51 ^{a, b}	51 ^{a-d}	34
b I would take someone like the lead character out with me to visit friends	85 ^{a, b, d}	82	81	76
c I think the lead character could have done something to avoid his or her condition	43 ^{a-d}	50 ^{a-e}	84 ^{a-e}	26
d I think people like the lead character can be helped	84 ^{a, b}	84 ^{a, b}	97 ^{a-c}	92
e I think people like the lead character no longer enjoy life	54 ^{a-e}	60 ^{a-e}	46 ^{a-e}	27
f I think people like the lead character should be cared for like young children	61 ^{a-e}	58 ^{a-e}	83 ^{a-e}	22
g I would feel embarrassed if someone in my family behaved like the lead character	16 ^{a, b, e}	10	7	8

^a Pairwise χ^2 significant difference to 3rd generation Australians.

^b Pairwise χ^2 significant difference to 3rd generation Australians after controlling for age and gender.

^c Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for education, income, occupation and marital status.

^d Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for dementia experience.

^e Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for community association, English language media use and native language media use.

Table 4. Responses (%) to the question on the cause of dementia, and differences between racial and ethnic minority groups and 3rd generation Australians

	Italian (n = 350)	Greek (n = 414)	Chinese (n = 437)	3rd generation Australian (n = 500)
Don't know	43 (not tested)	34 (not tested)	30 (not tested)	40
Old age	39 ^{a-d}	28	42 ^{a-e}	29
Brain disease	13 ^{a, b, e}	18 ^a	10 ^{a-e}	27
Genetics	16	10	7 ^{a-d}	16
Mentally not active	7	9	12	12
Stress	8 ^{a-e}	21 ^{a-e}	6 ^d	2
Loneliness	5	10 ^{a, b}	15 ^{a-e}	3
Diet	3	6	4	5
Physically not active	1	4	6	4
Lifestyle	1	7 ^{a, b}	1	3
Stroke	5	2	3	2
The person's personality	2	2	7 ^{a-e}	≈ 0
Other	8 ^a	19	9 ^{a-d}	16

Percentages may exceed 100% as multiple responses were allowable.

^a Pairwise χ^2 significant difference to 3rd generation Australians.

^b Pairwise χ^2 significant difference to 3rd generation Australians after controlling for age and gender.

^c Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for education, income, occupation and marital status.

^d Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for dementia experience.

^e Pairwise χ^2 significant difference to 3rd generation Australians after additionally controlling for community association, English language media use and native language media use.

(0.12–0.61) and 0.38 (0.16–0.93), respectively], and to statement 'f' that people like the lead character should be cared for like a young child in Chinese (OR = 0.36, 99% CI = 0.14–0.93). Agreement with statement 'e' was also associated with having lived longer in Australia in Chinese (OR = -0.96, 99% CI = 0.93–0.996). Reading English print media daily, as compared to never, was associated with agreement with statement 'f' in Italians (OR = 5.31, 99% CI = 1.29–21.97), and with statement 'g' that the participant would be embarrassed by the behavior of the lead character in Chinese (OR = 0.11, 99% CI = 0.02–0.78). Agreement with statement 'g' was also associated with having undertaken a smaller portion of their education in Australia in Greek participants (OR = 1.01, 99% CI = 1.01–1.02).

Beliefs regarding the Cause and Contributors to Dementia

Many participants said they did not know what caused dementia (37%) or that dementia was due to old age (34%; table 4). The racial and ethnic minority groups were much more likely to suggest old age and psychosocial risk factors such as stress, loneliness and the person's person-

ality caused dementia, whereas 3rd generation Australians were more likely to suggest brain disease was the cause. Most differences between groups remained after controlling for sociodemographic variables, experience with dementia, ethnic diversity of social interactions and frequency of English media use.

Fewer Greek participants suggested that dementia was due to old age compared to Italian ($\chi^2 = 12.14$, $p < 0.001$) or Chinese ($\chi^2 = 20.43$, $p < 0.001$) participants. Italians were more likely to suggest genetics was a cause of dementia than Greek ($\chi^2 = 5.82$, $p = 0.016$) or Chinese ($\chi^2 = 16.66$, $p < 0.001$) participants. Compared to Italians, more Greeks thought that loneliness was a cause of dementia ($\chi^2 = 5.52$, $p = 0.019$). More Greeks believed stress caused dementia compared to Italian ($\chi^2 = 22.40$, $p < 0.001$) or Chinese ($\chi^2 = 39.85$, $p < 0.001$) Australians. More Chinese Australians believed loneliness caused dementia than Italian ($\chi^2 = 20.94$, $p < 0.001$) or Greek ($\chi^2 = 6.22$, $p = 0.013$) Australians.

A similar pattern of response was observed when participants were read a list of factors and asked whether they contributed to dementia (data not shown). However, the racial and ethnic minority groups were more likely to say

that high blood pressure (58, 67 and 61% of Italians, Greek and Chinese) and heart disease (40, 44 and 40%, respectively) contributed to dementia than 3rd generation Australians (48% for blood pressure and 31% for heart disease).

There were no acculturation variables associated with suggesting that old age and brain disease were causes of dementia for Italian and Greek participants. However, Italian participants who read Italian print media at least once a week were more likely to suggest stress as a cause of dementia than those who never read Italian print media (OR = 5.94, CI = 1.35–26.16). For Greek participants, those who reported speaking English very well were less likely to suggest stress as a cause than those who reported not speaking English at all (OR = 0.18, CI = 0.03–0.89). For Chinese participants, there were no acculturation variables associated with suggesting that brain disease and loneliness were causes of dementia. Chinese who used English broadcast media daily, as compared to never (OR = 0.33, CI = 0.11–0.94), and those who almost always interacted with their own ethnic group, as compared to those who almost never interacted with their own ethnic group (OR = 0.10, CI = 0.02–0.54), were more likely to suggest old age as a cause of dementia.

Discussion

In this study, Italian, Greek and Chinese Australians had poorer recognition and more negative attitudes and beliefs about causes of dementia than 3rd generation Australians. These differences in knowledge were still significant after controlling for demographics and socioeconomic status, and may reflect cultural beliefs. These results are consistent with a study showing that there was poorer dementia knowledge in Black compared to White Americans, and this was not accounted for by socioeconomic variables [12]. The result suggests that greater community effort is needed to educate these ethnic minority groups and that ethnic minority groups not studied here may also have poor dementia knowledge.

Similar to our previous dementia literacy study [9], we found a high rate of recognition of dementia symptoms in 3rd generation Australians (85%). Recognition was lower in Italian, Greek and Chinese groups. While the recognition of dementia by Chinese was higher than by Italian and Greeks, it is notable that the Chinese term for dementia 老年痴呆症 literally translates to ‘old person crazy/stupid/retarded disease’, a label that may carry considerable stigma [19]. Increased symptom severity did not

improve the recognition of dementia for ethnic minority groups than for 3rd generation groups. Perhaps reports of later presentation for dementia diagnosis of ethnic minority groups are not due to recognizing the symptoms later, but rather, taking longer to seek help. Taken together with the frequent belief that dementia is a normal part or consequence of old age, this suggests that education is needed to explain how to discriminate between normal changes with aging and dementia, and that there are treatments and services available for persons with dementia.

Generally, attitudes towards persons with dementia were more negative in the ethnic minority groups than 3rd generation Australians. Interesting cultural differences between the groups included that a large majority of the Chinese participants were much more likely to think that persons with dementia should be cared for like young children. This reflects a traditional belief that older persons regress into childhood. Another rather contradictory finding was that a large majority of Chinese thought that persons with dementia could have done something to avoid the condition. This may reflect an attitude that the person with dementia is at least partly responsible for developing the disease.

Many participants said they did not know the cause of dementia. However, 3rd generation Australians tended to attribute dementia to biological causes such as brain disease and genetics. On the other hand, racial and ethnic minorities believed in the contribution of psychosocial factors, consistent with the notion that the person or their life circumstances may be responsible for their condition.

Interestingly, being a 1st generation migrant was the acculturation variable most strongly associated with some attitudinal statements, but not with recognition of dementia or causal beliefs. Thus, in racial and ethnic minority groups, being born in Australia was not as important a predictor of dementia knowledge as were interactions with the broad Australian community. Frequent use of English print media was associated with recognition of dementia and with some attitudes towards dementia, suggesting that some members of ethnic groups receive dementia messages in mainstream English language media. However, markers of greater acculturation were associated with better knowledge, suggesting that migrants bring perceptions regarding dementia from their culture of origin. This is supported by differences between the ethnic minority groups on attitudes and causal beliefs, implying that dementia education needs to tailor messages for each group.

This is the largest survey to date of the dementia literacy of migrants from racial and ethnic minorities. The representativeness of this sample is not known. However, the sampling technique has previously been found to result in a representative sample of Chinese Australians. The participation rate for the racial and ethnic minority groups was relatively high for a telephone survey, especially given these groups are less likely to participate in research [29], and their demographic characteristics were as expected. The study was limited by possible social desirability bias on the attitudinal statements, and summarizing of symptoms in a vignette may have facilitated dementia recognition.

General Conclusions

Scientific knowledge about dementia is increasing rapidly. There is a large difference in dementia literacy between 3rd generation Australians and ethnic minority groups. The percentage differences are striking and would translate into major differences in help-seeking and service use, and early diagnosis. This indicates the need for targeted education to these groups to improve

dementia literacy. The relatively poor understanding that dementia is a neurological disease also suggests the need for further education about dementia as a neurological condition. Our finding that dementia is often attributed to old age reflects negative age stereotypes that result from a misunderstanding about dementia symptoms. We conclude that in order to increase public knowledge about the difference between normal aging and dementia, it is important to target and tailor messages for ethnic and minority groups, to reduce stigma and negative stereotypes about ageing, and increase early help seeking and diagnosis.

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