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ORIGINAL PAPER

Acceptability of psychological treatment to Chinese- and Caucasian-Australians: Internet treatment reduces barriers but face-to-face care is preferred

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Abstract
Purpose Internet treatments have the potential to improve access, especially for cultural groups who face considerable treatment barriers. This study explored the perceived barriers and likelihood of using Internet and face-to-face treatments for depression among Chinese and Caucasian Australian participants.
Methods Three-hundred ninety-five (289 Chinese, 106 Caucasian) primary care patients completed a questionnaire about depression history, previous help-seeking, perceived barriers to Internet and face-to-face treatment, and likelihood of using either treatment for depressive symptoms.
Results Internet treatment reduced perceived barriers (including stigma, lack of motivation, concerns of bringing up upsetting feelings, time constraints, transport difficulties, and cost) for both groups to a similar degree, except for time constraints. There were heightened concerns about the helpfulness, suitability, and confidentiality of Internet treatments. Chinese participants and individuals with a probable depression history reported increased perceived barriers across treatments. Both Chinese and Caucasian groups preferred face-to-face treatment across depression severity. However, when age was controlled, there were no significant concerns about Internet treatment, and face-to-face treatment was only preferred for severe depression. Only 12 % of the entire sample refused to try Internet treatment for depression. Endorsement of perceived Internet treatment barriers (including concerns of bringing up upsetting feelings, that treatment would be unhelpful or unsuitable, lack of motivation, cost, cultural sensitivity, and confidentiality) reduced the likelihood to try Internet treatments.
Conclusions Internet treatment reduced perceived treatment barriers across groups, with encouraging support for Internet treatment as an acceptable form of receiving help. Negative concerns about Internet treatment need to be addressed to encourage use.

Keywords Chinese · Australian · Acceptability · Perceived barriers · Internet treatment for depression

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Introduction

There is increasing interest in using the Internet to improve access to evidence-based psychological treatments. Advantages to patients include overcoming distances to services, reduced waiting time for therapy, lower cost, reduced stigma and embarrassment in seeking help, and flexibility in accessing treatment at their own time and pace [1]. Internet treatments can potentially reach individuals who do not consult face-to-face care and have promise as a first-line low-intensity treatment within a stepped care model [2]. For Internet treatments to be successfully implemented into routine practice, it will need to achieve "equivalence in terms of clinical outcomes, efficiency in terms of resource use and costs, and acceptability … to patients and therapists" [3]. Despite expanding support for the efficacy [4–6], effectiveness [7], and cost-effectiveness [8, 9] of Internet-delivered cognitive behavioural therapy (iCBT) for depression and anxiety, there is relatively little

research into the public perceptions of Internet treatment, its use and acceptability.

Treatments that are viewed as acceptable by potential consumers are more likely to be sought out and adhered to when they are offered [10]. iCBT outcome trials have reported low uptake rates but comparable attrition rates to other forms of psychological treatments, suggesting acceptability at least among research participants who initiate treatment [11, 12]. Although online survey samples have rated Internet treatments acceptable for mild and moderate symptoms of anxiety and depression [13], patients at speciality clinics and primary care settings have reported low intentions to use Internet therapy and a preference for face-to-face care [14, 15]. Internet treatments were viewed as impersonal and rated as low-moderate in terms of credibility and expectancy-for-improvement [16]. Nonetheless, among patients who were not interested in face-to-face treatment, 15 % would consider or wanted Internet treatment, suggesting potential to reach individuals who would not otherwise seek traditional help [15]. However, little is known about the factors that predict acceptability, such as perceived barriers to treatment [17].

Further, there is minimal research into the acceptability of Internet therapy to individuals from culturally or linguistically diverse (CALD) backgrounds. International studies have reported that people from CALD backgrounds have lower rates of service use compared to the majority of the population [18–20] due to stigma, cultural beliefs about the cause of mental illness, culturally sanctioned coping styles, ineffective communication with providers, and unresponsive services [21, 22]. For example, Chinese migrants with depression in Australia, the U.S., and Canada underutilize professional help [23–25] and have long delays and severe symptoms when they reach services [26, 27]. Common barriers to face-to-face treatment include cultural practices of tolerating distress [28], strong levels of shame and "loss of face" [29, 30], little knowledge about mental disorders and its treatment [31, 32], language and communication difficulties, cost, transportation difficulties, time constraints, and lack of culturally sensitive services [33–35]. Nonetheless, Chinese and Asian international students indicated willingness to engage in Internet interventions despite a preference towards face-to-face treatment [36, 37].

Given the potential of Internet treatments to reduce structural and cultural barriers to treatment, it may be an acceptable form of receiving help to people from CALD backgrounds [38]. There are already several examples of culturally adapted Internet treatment for depression worldwide [38–40]. Further, a recent study suggested that Internet treatment encourages Chinese migrants with depression to seek help early because of the reduction of structural barriers (under review) [41]. However, most participants in culturally adapted Internet treatments self-selected to receive treatment as part of a research study. It is important to determine whether lay CALD persons would also perceive that Internet treatment reduces barriers and be willing to seek help online.

This study set to explore the acceptability of Internet treatment for depression among Chinese and non-Chinese Caucasian participants. Using a survey design, the study investigates whether Internet treatment is perceived to reduce barriers compared to face-to-face treatment. It will also explore the preferences in seeking Internet or face-to-face treatment according to symptom severity. Further, the study will compare whether Internet treatment is perceived to have fewer barriers and is more likely to be used among Chinese than Caucasian participants.

Method

Participants and procedure

Participants were consecutive patients routinely attending medical practices in Sydney, Australia. Recruitment occurred at five general practices and two private specialist clinics in Sydney central business district and surrounding suburbs with an over-representation of Chinese populations during March to August 2013. Individuals over 18 years of age attending the medical practices were approached by the receptionist or the first author in their preferred language (English, Mandarin, or Cantonese) and were invited to complete a questionnaire (English or Chinese version) anonymously while waiting to see a physician. The researchers attempted to recruit all eligible participants, except when busy periods exceeded the capacity to recruit. Participants were asked to return completed questionnaires to a locked box to ensure confidentiality. To reimburse participant time, participants could opt to provide contact details to enter a draw for a shopping voucher. Contact details were stored separately to their responses to maintain anonymity. If patients declined participation, they were invited to complete basic demographic information and return the blank questionnaire to the collection box to provide details about non-responders.

Measures

A four-page self-report pen-and-paper questionnaire was developed. The Chinese version of the questionnaire was translated by the first author (who is a native Chinese speaker) and was independently back-translated into English until semantic and linguistic equivalence were achieved. The questionnaire was pilot tested in a separate sample of 11 bilingual Chinese Australians and items were subsequently modified to improve comprehension, interpretability and functionality.

The first section of the questionnaire sought demographic information. The second section asked about depression history and help-seeking. Four items were adopted from the Composite International Diagnostic Interview version 3.0 (CIDI 3.0) screener section [42] to determine probable depression history. The items asked whether participants had experienced a minimum 2-week period in their life of feeling sad, empty, or depressed, or felt very discouraged about how things were going in their life, or a loss of interest. Previous help-seeking was assessed by questions adopted from the 2007 National Survey of Mental Health and Wellbeing (NSMHWB2007) [43]. Participants were asked if they had ever seen a health professional for depression, and whether they had ever used the Internet to get help or information for depression. They were also asked to select reasons for not seeking help from health professionals for depression.

The final section asked about perceived barriers in accessing face-to-face and Internet treatments and the likelihood of using either treatment based on symptom severity. Participants then read information defining the two treatments: "Face-to-face treatment involves receiving individual or group psychological therapy from a therapist. Internet treatment websites are those that directly provide treatment for depression. Treatment might involve completing a structured set of lessons or modules online, and/or working with a therapist online. Internet treatment may be provided in any language". Participants were informed that both treatments for depression were helpful to people across cultural groups and were equally effective. Participants rated the degree different treatment barriers were perceived to hinder seeking face-to-face and Internet treatments, respectively, on a 5-point scale (1 = not at all, 2 = slightly, 3 = moderately, 4 = very much, 5 = definitely). A list of twelve potential treatment barriers was derived from a review of the relevant literature [44, 45]. Participants then rated the likelihood of accessing face-to-face or Internet treatment if they or their family wanted to learn about low mood and its treatment, or had mild, moderate, or severe symptoms of depression on a 5-point scale (1 = very unlikely, 2 = unlikely, 3 = neutral, 4 = likely, 5 = very likely), as adapted from Gun et al. [13]. Finally, participants were asked whether they would try Internet treatment if they were seeking help for depression.

Analyses

Respondents were categorized into Chinese or non-Chinese Caucasian control by self-reported cultural background and language spoken at home. If this information was not directly available, language of survey and country of birth were used to estimate cultural group membership. Respondents who did not identify with either cultural group were omitted from further analysis.

A binary depression history variable was created, with participants endorsing a depressive symptom on the CIDI screener questions for a minimum of 2 weeks being coded as having a probable depression history. To calculate the total number of perceived barriers experienced in face-to-face and Internet treatments, endorsement of each individual barrier was coded as 1, while non-endorsement of a barrier was coded as 0. The barriers were added to derive a total number of perceived barriers for face-to-face and Internet treatments.

Group differences in demographics, depression history, and help-seeking were analysed with *t* tests and Chi-square tests. Univariate three-way mixed model analyses of variance (ANOVAs) were conducted to compare the total number of perceived barriers and the degree each perceived barrier hindered treatment seeking for face-to-face and Internet treatment among the Chinese and control groups, across the binary depression variable. The likelihood of using face-to-face and Internet treatment based on symptom severity by Chinese and controls, across depression history was analysed by univariate mixed model ANOVAs. Chi-square tests were used to compare the likelihood of trying Internet treatment for depression between groups, and to explore the relation between likelihood of trying Internet treatment and perceived barriers. A significance level of $p < 0.05$ was used for all analyses.

Ethics

This study was approved by the Human Research Ethics Committee (HREC) of the University of Sydney. Informed consent was assumed when participants returned the completed questionnaire to the collection box.

Results

Response rates

Details of participant flow are in Fig. 1. During the study timeframe, a total of 689 questionnaires were distributed. A total of 158 individuals declined, resulting in a response rate of 77 %. Seventy-three participants did not identify as Chinese or non-Chinese Caucasian and were excluded for the purposes of this study. Sixty-three participants returned substantively incomplete questionnaires and were excluded from the analyses. This derived a final sample of 395 participants (289 Chinese and 106 non-Chinese Caucasian controls). Survey non-responders were significantly older ($n = 90$; $M = 49.63$, SD = 17.07) than survey responders ($n = 389$, $M = 36.57$, SD = 12.74) ($t_{113} = 6.83$,

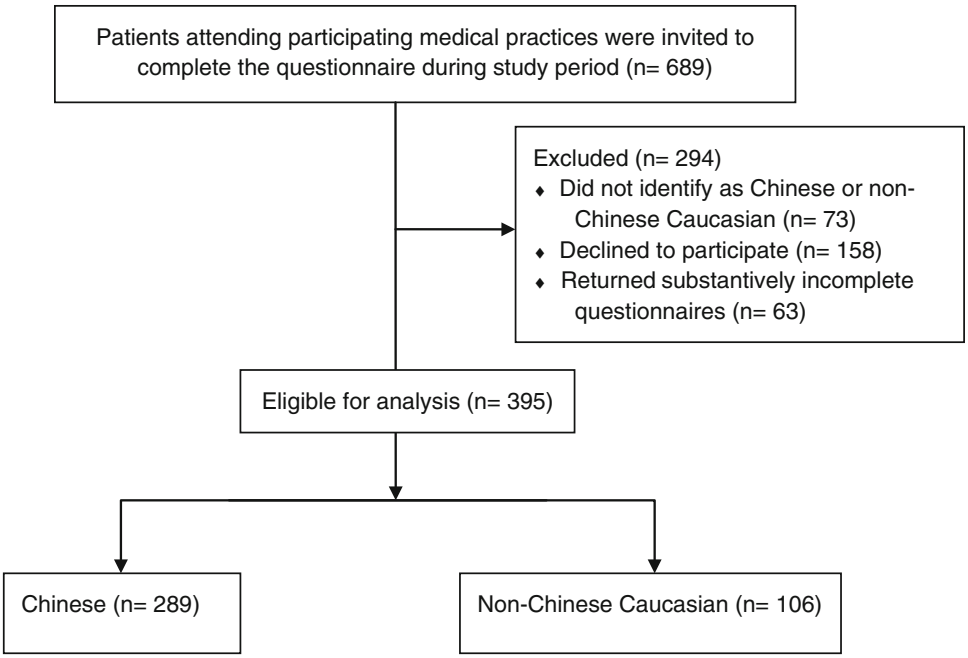

Fig. 1 Participant flow

$p < 0.0005$), but were similar on gender ($\chi^2 = 2.77$, $p > 0.05$).

Preliminary analyses

The mean age of the Chinese ($M = 36.76$, SD = 13.73) and control groups ($M = 36.06$, SD = 9.47) were comparable ($t_{257} = -0.563$, $p > 0.05$). Groups did not differ on gender, marital status, and education level ($ps > 0.05$), but they were significantly different in employment status ($p < 0.0005$) (Table 1). The main countries of birth for the Chinese participants were China (52 %), Hong Kong (25 %), Taiwan (5 %), Malaysia (5 %), Australia (4 %), Indonesia (2 %), and Singapore (1 %). Meanwhile, 73 % of the controls were born in Australia, 9 % in the United Kingdom, and 6 % in New Zealand. The main languages spoken at home by the Chinese participants were Chinese (dialects not specified) (30 %), Cantonese (26 %), Mandarin (19 %), English (11 %), and a mix of English and a Chinese dialect (10 %). The majority of controls spoke English at home (89 %), 10 % did not specify a home language, and 1 % spoke French at home. Forty-three percent of the Chinese participants spoke fluent English, 50 % had fair or adequate English levels, and 7 % did not speak any English. All controls reported speaking fluent English.

The help-seeking characteristics of participants are reported in Table 1. The Chinese group was significantly less likely to report a probable depression history compared to controls ($p < 0.0005$). They were less likely to have sought professional help or consulted the Internet for depression (all $ps < 0.05$). The Chinese group was also more likely to report not seeking help because they did not have depression ($p = 0.022$), but there was no difference between groups on other reasons for not seeking help (all $ps > 0.05$).

Perceived barriers to face-to-face treatment vs. Internet treatment

Out of the 12 perceived barriers, the Chinese group endorsed an average of 8.16 (SD = 3.30) barriers for seeking face-to-face treatment and 7.01 (SD = 3.70) barriers for seeking Internet treatment. Controls reported 6.50 (SD = 2.75) and 5.08 (SD = 3.10) perceived barriers for seeking face-to-face and Internet treatment, respectively. Both groups reported significantly fewer perceived barriers for Internet treatment than face-to-face treatment ($F_{1,307} = 62.70$, $p < 0.0005$). The Chinese participants reported significantly more perceived barriers than controls across treatments ($F_{1,307} = 23.34$, $p < 0.0005$). Further, participants with a probable depression history reported significantly more perceived barriers than those without depression ($F_{1,307} = 6.26$, $p = 0.013$). There was no significant interaction effect ($ps > 0.05$).

Table 2 shows the degree to which perceived barriers deterred seeking face-to-face and Internet treatment among the Chinese and control groups, across the binary depression variable. Internet treatment significantly reduced perceived barriers including stigma ($F_{1,346} = 104.66$, $p < 0.0005$), lack of motivation ($F_{1,339} = 33.96$, $p < 0.0005$), concerns about bringing up upsetting feelings

Table 1 Demographic and help-seeking characteristics of Chinese and Caucasian participants

Variable	Chinese		Caucasian		Totals		Significance statistics
	n	%	*n*	%	*n*	%	
Gender							
Female	206	73	68	66	274	71	$\chi^2 = 1.82$, $p = 0.222$
Male	76	27	35	34	111	29	
Marital status							
Single/never married	81	29	25	24	106	28	$\chi^2 = 1.52$, $p = 0.468$
Married/de facto	179	64	67	65	246	64	
Separated/divorced/widowed	21	7	11	11	32	8	
Education							
High school or less	64	23	16	15	80	21	$\chi^2 = 2.82$, $p = 0.244$
Other certificate after high school	22	8	7	7	29	7	
Tertiary education	196	69	81	78	277	72	
Employment							
Full-time paid work	99	36	60	61	159	42	$\chi^2 = 24.19$, $p < 0.0005$
Part-time paid work	59	22	19	19	78	21	
Student	42	15	5	5	47	13	
At home parent	28	10	10	10	38	10	
Not working	47	17	5	5	52	14	
Probable depression history	67/272	25	45/98	46	112/370	30	$\chi^2 = 15.47$, $p < 0.0005$
Ever sought professional help for depression							
Any help	73/284	26	55/104	53	128/388	33	$\chi^2 = 25.44$, $p < 0.0005$
GP	44/284	16	47/104	45	91/388	24	$\chi^2 = 37.40$, $p < 0.0005$
Psychiatrist	16/284	6	17/104	16	33/388	9	$\chi^2 = 11.23$, $p = 0.001$
Psychologist	41/284	14	30/104	29	71/388	18	$\chi^2 = 10.57$, $p = 0.001$
Alternative therapies	10/284	4	14/104	14	24/388	6	$\chi^2 = 12.96$, $p < 0.0005$
Sought help via the Internet	50/279	18	45/101	45	95/380	25	$\chi^2 = 28.05$, $p < 0.0005$
Reason not sought help							
Never had depression	100/283	35	24/104	23	124/387	32	$\chi^2 = 5.25$, $p = 0.022$
Did not think they needed help	34/283	12	10/104	10	44/387	11	$\chi^2 = 0.43$, $p = 0.591$
Prefer to self manage	68/283	24	24/104	23	92/387	24	$\chi^2 = 0.04$, $p = 0.845$
Thought nothing else could help	21/283	7	4/104	4	25/387	7	$\chi^2 = 1.61$, $p = 0.205$
Did not know where to get help	14/283	5	1/104	1	15/387	4	$p = 0.347^{\dagger}$
Afraid to ask of help or of what others would think of me	8/283	3	5/104	5	13/387	3	$p = 0.080^{\dagger}$
Cost	11/283	4	5/104	5	16/387	4	$p = 0.774^{\dagger}$
Asked but did not receive help	8/283	3	2/104	2	10/387	3	$p = 1.00^{\dagger}$
Got help from another source	19/283	7	6/104	6	25/387	7	$\chi^2 = 0.11$, $p = 0.738$

† Fisher's exact probability test was used

($F_{1,340} = 31.98$, $p < 0.0005$), physical or transport difficulties ($F_{1,336} = 67.10$, $p < 0.0005$), and cost ($F_{1,334} = 115.79$, $p < 0.0005$) across groups. In addition, both groups reported reduced time constraints in Internet treatment ($F_{1,341} = 147.68$, $p < 0.0005$), and the difference between face-to-face and Internet treatment was greater for controls ($F_{1,341} = 11.43$, $p = 0.001$). However, there were significantly increased perceived barriers for Internet treatment with regard to concerns that treatment would be unhelpful ($F_{1,343} = 6.91$, $p = 0.009$) and treatment would be unsuitable for their problems ($F_{1,340} = 8.10$, $p = 0.005$) compared to face-to-face treatment.

Chinese participants reported significantly heightened perceived barriers across treatments for physical or transportation difficulties ($F_{1,336} = 17.17$, $p < 0.0005$) and concerns that therapy would be culturally insensitive ($F_{1,345} = 68.88$, $p < 0.0005$), compared to controls. The Chinese group also reported heightened perceived barriers regarding language and communication difficulties

Table 2 The degree perceived barriers deterred help-seeking from face-to-face and Internet treatment among Chinese and Caucasian participants, across probable and absent depression history

Barrier	Chinese		Caucasian	
	Depression history		Depression history	
	Probable Mean (SD)	Absent Mean (SD)	Probable Mean (SD)	Absent Mean (SD)
Stigma				
Face-to-face treatment	2.41 (1.19)	2.02 (0.98)	2.24 (1.17)	2.06 (0.99)
Internet treatment	1.76 (1.08)	1.51 (0.87)	1.52 (1.04)	1.31 (0.55)
Lack of motivation				
Face-to-face treatment	2.84 (1.07)	2.36 (1.08)	2.98 (1.09)	2.33 (1.18)
Internet treatment	2.48 (1.26)	2.08 (1.04)	2.48 (1.42)	1.70 (0.92)
Concerns about bringing up upsetting feelings				
Face-to-face treatment	2.65 (1.34)	2.13 (1.05)	2.51 (1.14)	2.26 (1.14)
Internet treatment	2.38 (1.28)	1.86 (0.98)	2.09 (1.31)	1.76 (0.97)
Concerns that therapy would be unhelpful				
Face-to-face treatment	2.94 (1.08)	2.24 (1.14)	2.77 (1.27)	2.31 (1.17)
Internet treatment	3.00 (1.41)	2.41 (1.21)	3.07 (1.22)	2.46 (1.37)
Concerns that therapy would be unsuitable for one's problems				
Face-to-face treatment	2.67 (1.14)	2.13 (1.02)	2.58 (1.16)	2.36 (1.15)
Internet treatment	2.98 (1.39)	2.43 (1.19)	2.86 (1.10)	2.26 (1.26)
Time constraints				
Face-to-face treatment	2.80 (1.14)	2.34 (1.13)	3.00 (1.35)	2.87 (1.26)
Internet treatment	2.09 (1.17)	1.78 (1.03)	2.07 (1.06)	1.57 (0.99)
Physical or transportation problems				
Face-to-face treatment	2.20 (1.18)	1.84 (0.95)	1.65 (1.00)	1.53 (0.82)
Internet treatment	1.46 (0.92)	1.40 (0.77)	1.16 (0.69)	1.04 (0.21)
Availability of suitable services				
Face-to-face treatment	2.81 (1.10)	2.10 (0.93)	2.43 (1.27)	1.72 (0.94)
Internet treatment	2.52 (1.23)	2.32 (1.19)	2.31 (1.33)	2.04 (1.15)
Cost				
Face-to-face treatment	3.18 (1.41)	2.72 (1.34)	3.21 (1.46)	2.48 (1.31)
Internet treatment	2.39 (1.30)	2.22 (1.23)	2.24 (1.39)	1.63 (1.00)
Language and communication difficulties				
Face-to-face treatment	2.15 (1.28)	1.95 (1.15)	1.02 (0.15)	1.19 (0.57)
Internet treatment	2.03 (1.27)	1.87 (1.11)	1.37 (1.02)	1.19 (0.57)
Concerns that therapy would be insensitive to one's culture				
Face-to-face treatment	2.35 (1.43)	1.91 (1.00)	1.05 (0.31)	1.15 (0.51)
Internet treatment	2.14 (1.32)	1.95 (1.05)	1.12 (0.63)	1.19 (0.57)
Concerns about confidentiality				
Face-to-face treatment	2.32 (1.32)	2.03 (1.18)	1.37 (0.82)	1.46 (0.85)
Internet treatment	2.52 (1.53)	2.27 (1.37)	2.05 (1.33)	1.96 (1.25)

compared to controls ($F_{1,346} = 45.71$, $p < 0.0005$) across treatments, but the difference between face-to-face and Internet treatment was larger for controls ($F_{1,346} = 5.16$, $p = 0.024$). With regards to concerns about confidentiality, both groups had higher concerns about confidentiality in Internet treatment than in face-to-face treatment ($F_{1,345} = 23.54$, $p < 0.0005$) and the Chinese participants overall had higher concerns about confidentiality ($F_{1,345} = 17.86$, $p < 0.0005$), but a significant interaction effect indicated that the difference between concerns in face-to-face and Internet treatment was smaller for the Chinese group ($F_{1,345} = 4.80$, $p = 0.029$).

Further, individuals with a probable depression history reported significantly higher perceived barriers of stigma ($F_{1,346} = 5.88$, $p = 0.016$), lack of motivation ($F_{1,339} = 22.87$, $p < 0.0005$), concerns about bringing up upsetting feelings ($F_{1,340} = 10.19$, $p = 0.002$), concerns that treatment would be unhelpful ($F_{1,343} = 17.58$, $p < 0.0005$) or unsuitable for their problems ($F_{1,340} = 13.36$, $p < 0.0005$), time constraints ($F_{1,341} = 7.99$, $p = 0.005$), and cost ($F_{1,334} = 10.47$, $p = 0.001$), compared to those without a depression history. With regards to the availability of suitable services, the Chinese group reported higher perceived barriers ($F_{1,335} = 6.29$, $p = 0.013$), as did participants with a probable depression history ($F_{1,335} = 14.24$, $p < 0.0005$). However, a significant interaction effect between treatment medium and depression history ($F_{1,335} = 11.14$, $p = 0.001$) indicated that those without a depression history reported more perceived barriers related to the availability of Internet treatment than those with depression.

Given that survey responders and non-responders significantly differed on age, post hoc analyses of covariance (ANCOVAs) were conducted with age as a covariate. All results remained the same except the main effects of treatment medium did not reach significance for concerns that treatment would be unhelpful, treatment would be unsuitable for their problems, and confidentiality (all $ps > 0.05$). Also, due to significant differences in employment status between the Chinese and control groups, post hoc mixed ANOVAs were conducted for perceived barriers to face-to-face and Internet treatments between the Chinese and control groups, across individuals who were in full-time employment and those who were not. Employed individuals were less concerned that treatment was insensitive to their culture ($F_{1,350} = 4.43$, $p = 0.036$). In addition, the main effect of cultural group did not reach significance for concerns about availability of treatment. Employment status was not significant for any other variable ($p > 0.05$).

Likelihood of using face-to-face and Internet treatment based on severity of depression

Table 3 provides the likelihood of using face-to-face and Internet treatment among Chinese and control groups, across the binary depression variable. The Chinese group was less likely to seek information about depression across treatment mediums compared to controls ($F_{1,338} = 7.33$, $p = 0.007$), but when age was entered as a covariate, face-to-face treatment was also preferred over Internet treatment ($F_{1,332} = 7.38$, $p = 0.007$). Both groups were significantly more likely to use face-to-face treatment than Internet treatment for mild ($F_{1,338} = 13.30$, $p < 0.0005$), moderate ($F_{1,339} = 53.40$, $p < 0.0005$), and severe depression ($F_{1,336} = 113.85$, $p < 0.0005$). However, when age was entered as a covariate, face-to-face treatment was only preferred for severe depression ($F_{1,330} = 6.11$, $p = 0.014$). There was no main effect for depression history or any interaction effects (all $ps > 0.05$).

Table 3 The likelihood of using face-to-face and Internet treatment among Chinese and Caucasian participants, across probable and absent depression history

Severity	Chinese		Caucasian	
	Depression history		Depression history	
	Probable Mean (SD)	Absent Mean (SD)	Probable Mean (SD)	Absent Mean (SD)
Learn about depression and its treatment				
Face-to-face treatment	3.58 (1.17)	3.23 (1.20)	3.56 (1.20)	3.62 (1.01)
Internet treatment	3.11 (1.30)	3.26 (1.31)	3.70 (1.23)	3.50 (1.43)
Mild depression				
Face-to-face treatment	3.73 (1.09)	3.59 (1.14)	3.74 (1.11)	3.84 (1.08)
Internet treatment	3.12 (1.39)	3.32 (1.35)	3.60 (1.29)	3.31 (1.32)
Moderate depression				
Face-to-face treatment	4.05 (1.06)	3.98 (1.04)	4.16 (0.97)	4.23 (0.90)
Internet treatment	3.34 (1.42)	3.39 (1.36)	3.53 (1.35)	3.31 (1.39)
Severe depression				
Face-to-face treatment	4.41 (0.98)	4.39 (0.96)	4.60 (0.82)	4.52 (0.86)
Internet treatment	3.27 (1.58)	3.53 (1.53)	3.53 (1.52)	3.32 (1.53)

Likelihood to try Internet treatment

There was no difference between the Chinese and controls ($\chi^2 = 4.35$, $p > 0.05$) on likelihood to try Internet treatment for depression. Overall, 63 (16 %) of the sample indicated that they *definitely would* use Internet treatment, 139 (37 %) said they *possibly would*, 132 (35 %) said they *maybe would*, and 47 (12 %) indicated that they *definitely would not* use Internet treatment.

Chi-square tests found significant differences on the likelihood of trying Internet treatment for those who endorsed perceived barriers to Internet treatment and those who did not, including lack of motivation ($\chi^2 = 12.20$, $p = 0.007$), concerns about treatment bringing up upsetting feelings ($\chi^2 = 8.98$, $p = 0.030$), treatment would be unhelpful ($\chi^2 = 12.03$, $p = 0.007$) or unsuitable ($\chi^2 = 16.86$, $p = 0.001$), cost ($\chi^2 = 11.96$, $p = 0.008$), concerns about cultural sensitivity of treatment

($\chi^2 = 13.20$, $p = 0.004$), and concerns about confidentiality ($\chi^2 = 9.57$, $p = 0.023$).

Discussion

This study explored the acceptability of Internet treatment for depression among Chinese- and Caucasian-Australians attending primary care. Results found that Internet treatment is perceived to reduce barriers among both groups, but face-to-face treatment is more preferable, though only 12 % of participants indicated that they would not try Internet treatments. While an obvious advantage of Internet treatment is the reduction of structural barriers (including cost, transport difficulties, and time constraints), it appears that Internet treatment also decreases perceived attitudinal or emotional barriers to treatment (such as stigma, lack of motivation, and concerns about bringing up upsetting feelings). Further, both groups reported that Internet therapy reduced perceived barriers in a comparable manner, except for time constraints and language. The Caucasian participants reported a greater reduction of perceived barriers for time constraints in Internet treatment and this appeared unrelated to employment status. They also rated heightened barriers for language and communication difficulties for Internet treatments. While this was not a strong barrier, it may reflect concern about communication in Internet treatments.

Despite Internet treatments were perceived to reduce more barriers, it did not appear more attractive to potential consumers as a treatment option. The finding of a stronger preference for face-to-face care over Internet treatment is consistent with previous studies [14, 15], however, seems potentially at odds with the finding of fewer perceived barriers. One possibility is that the perceived barriers associated with Internet treatment (such as concerns about its helpfulness, suitability, and confidentiality) had a greater impact on intention to seek help than its advantages. In weighing the advantages and disadvantages of Internet therapy, participants may have felt that the negative concerns were strong enough to outweigh the potential benefits of seeking help online. Nonetheless, when age was controlled, the negative concerns associated with Internet treatment did not reach significance and preference for face-to-face treatment only remained for severe depression, suggesting that attitudes towards Internet treatments may be related to age. It is unclear how age affects seeking Internet therapy, with one study reporting that people seeking Internet treatment tend to be older than those attending outpatient clinics [46], while another study found that patients at a mental health service who accepted Internet treatment were younger than those who refused [47]. Further research is needed to investigate the relation between age and attitudes towards Internet treatment.

Nonetheless, the finding that only 12 % of participants in this study were unwilling to try Internet treatment for depression provides encouraging support for its application in a routine care setting. This response is relatively positive compared to findings in previous studies of primary care participants [15] and comparative to that reported in online surveys [13, 48]. Further, the Chinese and control participants did not differ in their willingness to use Internet treatments, suggesting more accepting attitudes to trying new forms of treatment delivery.

However, researchers, service providers and policy makers need to address the perceived barriers associated with Internet treatment in order for it to be widely accepted and used. Results indicated that heightened perceived barriers on Internet treatment (including lack of motivation, concerns about bringing up upsetting feelings, that treatment would be unhelpful or unsuitable, cost, concerns about cultural sensitivity of treatment, and concerns about confidentiality) negatively impact on the likelihood of trying Internet treatment. Concerns that treatment is unhelpful or unsuitable can be addressed by improving knowledge about Internet interventions. Studies have reported that the lack of access to information about Internet treatments reduces intentions to use [14], but simple demonstrations or presenting information about Internet treatment markedly improves consumer attitudes and likelihood of future use [16, 49]. More effort is needed to disseminate research findings of Internet treatment to the general population (including what is Internet therapy for depression, how it works, what conditions it is suitable for, its advantages and disadvantages, for whom does it work, cost, and how it compares to traditional modes of treatment). While the Internet may allow for greater privacy and anonymity, consumers and mental health professionals may be concerned about the security in communicating sensitive information and keeping of confidential patient records online [50, 51]. Policies, guidelines, and infrastructure need to be established regarding the secure provision of Internet therapy and the transmission and storage of patient records [52], and patients need to be fully informed of the limitations of confidentiality online. Further, the addition of therapist support may improve acceptability among patients who are concerned about lack of motivation or prefer personal contact [53]. Internet therapies targeted to CALD groups should ensure that material is presented in the target language and that relevant cultural beliefs and values are incorporated to improve cultural sensitivity [38]. Although some of these issues have been previously raised [13, 48], they require urgent attention if Internet treatment for depression is to be integrated into routine practice.

Results also confirm that Chinese participants experienced more perceived barriers compared to their Caucasian counterparts regardless of treatment medium. Chinese migrants continue to face considerable cultural barriers to treatment, such as language and communication difficulties, concerns of insensitivity of treatment, and availability of suitable services. It appears that individuals in full-time employment had fewer concerns about the cultural sensitivity of treatment, possibly due to greater exposure to English-speaking or mainstream culture, but this was not further tested. Further, although Chinese participants reported increased perceived barriers in terms of availability of services, when employment status was taken into account, this relationship was no longer significant. Therefore, this barrier may not be as important for Chinese groups per se. The Chinese participants also reported heightened structural barriers to treatment, including transportation difficulties and confidentiality. Overall, these findings are consistent with increased difficulties among CALD groups in seeking help and advocate for matched-language, culturally sensitive, and flexible treatments to address barriers to treatment. Although Internet therapy did not reduce perceived barriers for Chinese participants more than for controls, it was associated with fewer perceived barriers than face-to-face treatment. In addition, the Chinese participants did not report higher perceived cultural or structural barriers to Internet treatment than the control group, suggesting that both groups experience the same types of concerns in deciding to access Internet therapy for depression. Indeed, it may be easier to seek help online regardless of cultural group, with support that Internet treatments improve reach to CALD groups and lower their threshold to contact health professionals [40].

In addition, individuals with a probable depression history had increased perceived barriers to treatment compared to those without depression, especially on stigma, lack of motivation, concerns that treatment would bring up upsetting feelings, concerns that treatment would be unhelpful or unsuitable for their problems, and cost. This is consistent with previous reports that depression itself is a barrier to receiving psychotherapy [44, 54]. While having a depressive history increased perceived barriers for availability of treatment, those with depression rated Internet treatment to decrease barriers in availability, suggesting that depressed individuals had greater awareness of the Internet treatments available than non-depressed individuals.

Despite careful attention to methodology, several limitations need to be considered in interpreting these results. First, probable depression history was estimated using screener questions adapted from the CIDI, and hence was not a valid diagnostic measure. Further, the CIDI questions asked about the "core" symptoms of depression and may not have captured all those Chinese participants with a depression history, given that Chinese migrants with depression have a tendency to identify somatic symptoms, rather core psychological symptoms [55, 56]. Second, this study surveyed perceived barriers and preference for seeking face-to-face and Internet treatments, which may not reflect actual future behaviour if the need for services arose. Third, no statistical adjustments for multiple hypotheses testing were made because the study was of exploratory nature. While it is possible that some of the significant results were due to type 1 errors, most of the analyses were highly significant, reducing the likelihood that this affected results. Fourth, the topic of interest in this study was whether treatment delivery medium affected perceived barriers and likelihood to use services. It is possible that references to specific types of Internet treatments, such as iCBT, may have resulted in different responses. Finally, recruitment from primary care settings may over-represent groups who access medical services frequently, and overlook individuals in the community who avoid traditional treatment. Although survey responders were younger in age than non-responders and there were differences in employment status between groups, these differences were accounted for in post hoc analyses.

Conclusion

This is the first study to explore and compare the acceptability of Internet treatment for depression among Chinese and Caucasian participants. Both groups reported that Internet treatment reduced perceived barriers to treatment, but face-to-face care was preferred for depression treatment across symptom severity. However, it appeared that the negative concerns of Internet treatment and likelihood to use Internet therapy for depression may be related to age. Nonetheless, only 12 % of participants were unwilling to try Internet treatment, suggesting that it has potential as an acceptable form of treatment for the majority of the population and CALD groups. It is critical that perceived barriers to Internet treatment are addressed to improve likelihood of use.

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References

1. Titov N (2007) Status of computerized cognitive behavioural therapy for adults. Aust N Z J Psychiatry 41:95–114
2. Kaltenthaler E, Brazier J, De Nigris E, Tumur I, Ferriter M, Beverley C, Parry G, Rooney G, Sutcliffe P (2006) Computerised cognitive behaviour therapy for depression and anxiety update: a systematic review and economic evaluation. Health Technol Assess 10(33):1–168
3. Bower P, Gilbody S (2005) Stepped care in psychological therapies: access, effectiveness and efficiency: narrative literature review. Br J Psychiatry 186:11–17
4. Andrews G, Cuijpers P, Craske MG, McEvoy P, Titov N (2010) Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: a meta-analysis. PLoS ONE 5(10):e13196. doi:10.1371/journal.pone.0013196
5. Andersson G, Cuijpers P (2009) Internet-based and other computerized psychological treatments for adult depression: a meta-analysis. Cogn Behav Ther 38:196–205
6. Cuijpers P, Marks IM, van Straten A, Cavanagh K, Gega L, Andersson G (2009) Computer-aided psychotherapy for anxiety disorders: a meta-analytic review. Cogn Behav Ther 38:66–82
7. Andersson G, Hedman E (2013) Effectiveness of guided internet-based cognitive behavior therapy in regular clinical settings. Verhaltenstherapie 23:140–148
8. Warmerdam L, Smit F, van Straten A, Riper H, Cuijpers P (2010) Cost-utility and cost-effectiveness of Internet-based treatment for adults with depressive symptoms: randomized trial. J Med Internet Res 12:40–50
9. Gerhards SA, de Graaf LE, Jacobs LE, Severens JL, Huibers MJ, Arntz A, Riper H, Widdershoven G, Metsemakers JF, Evers SM (2010) Economic evaluation of online computerised cognitive-behavioural therapy without support for depression in primary care: randomised trial. Br J Psychiatry 196:310–318
10. Kazdin AE (1980) Acceptability of alternative treatments for deviant child behavior. J Appl Behav Anal 13:259–273
11. Kaltenthaler E, Sutcliffe P, Parry G, Beverley C, Rees A, Ferriter M (2008) The acceptability to patients of computerized cognitive behaviour therapy for depression: a systematic review. Psychol Med 38:1521–1530
12. Waller R, Gilbody S (2009) Barriers to the uptake of computerized cognitive behavioural therapy: a systematic review of the quantitative and qualitative evidence. Psychol Med 39:705–712
13. Gun SY, Titov N, Andrews G (2011) Acceptability of Internet treatment of anxiety and depression. Australas Psychiatry 19:259–264
14. Carper MM, McHugh RK, Barlow DH (2013) The dissemination of computer-based psychological treatment: a preliminary analysis of patient and clinician perceptions. Admin Policy Mental Health 40:87–95
15. Mohr DC, Siddique J, Ho J, Duffecy J, Jin L, Fokuo JK (2010) Interest in behavioral and psychological treatments delivered face-to-face, by telephone, and by internet. Ann Behav Med 40:89–98
16. Mitchell N, Gordon PK (2007) Attitudes towards computerized CBT for depression amongst a student population. Behav Cogn Psychother 35:421–430
17. Kazdin AE (2000) Perceived barriers to treatment participation and treatment acceptability among antisocial children and their families. J Child Fam Stud 9:157–174
18. Sentell T, Shumway M, Snowden L (2007) Access to mental health treatment by English language proficiency and race/ethnicity. J Gen Intern Med 22(Suppl 2):289–293
19. Abe-Kim J, Takeuchi D, Hong S, Zane N, Sue S, Spencer MS, Appel H, Nicdao E, Alegria M (2007) Use of mental health-related services among immigrant and US-born Asian Americans: results from the National Latino and Asian American Study. Am J Public Health 97:91–98
20. Boufous S, Silove D, Bauman A, Steel Z (2005) Disability and health service utilization associated with psychological distress: the influence of ethnicity. Mental Health Serv Res 7:171–179
21. Snowden LR, Yamada AM (2005) Cultural differences in access to care. Annu Rev Clin Psychol 1:143–166
22. Scheppers E, van Dongen E, Dekker J, Geertzen J (2006) Potential barriers to the use of health services among ethnic minorities: a review. Fam Pract 23:325–348
23. Tiwari SK, Wang J (2008) Ethnic differences in mental health service use among White, Chinese, South Asian and South East Asian populations living in Canada. Soc Psychiatry Psychiatr Epidemiol 43:866–871
24. Parker G, Chan B, Tully L, Eisenbruch M (2005) Depression in the Chinese: the impact of acculturation. Psychol Med 35:1475–1483
25. Gonzàlez HM, Tarraf W, Whitfield KE, Vega WA (2010) The epidemiology of major depression and ethnicity in the United States. J Psychiatr Res 44:1043–1051
26. Ho KP, Hunt C, Li S (2008) Patterns of help-seeking behavior for anxiety disorders among the Chinese speaking Australian community. Soc Psychiatry Psychiatr Epidemiol 43:872–877
27. Chen S, Sullivan NY, Lu YE, Shibusawa T (2003) Asian Americans and mental health services. J Ethn Cult Divers Soc Work 12:19–42
28. Parker G, Gladstone G, Chee KT (2001) Depression in the planet's largest ethnic group: the Chinese. Am J Psychiatry 158:857–864
29. Hsu LKG, Wan YM, Chang H, Summergrad P, Tsang BYP, Chen H (2008) Stigma of depression is more severe in Chinese Americans than Caucasian Americans. Psychiatry 71:210–218
30. Mellor D, Carne L, Shen Y-C, McCabe M, Wang L (2012) Stigma toward mental illness: a cross-cultural comparison of Taiwanese, Chinese immigrants to Australia and Anglo-Australians. J Cross Cult Psychol 44:352–364
31. Wong DFK, Lam YKA, Poon A (2010) Depression literacy among Australians of Chinese-speaking background in Melbourne, Australia. BMC Psychiatry 10:7. doi:10.1186/1471-244X-10-7
32. Tieu Y, Konnert C, Wang J (2010) Depression literacy among older Chinese immigrants in Canada: a comparison with a population-based survey. Int Psychogeriatr 22:1318–1326
33. Kung WW (2004) Cultural and practical barriers to seeking mental health treatment for Chinese Americans. J Community Psychol 32:27–43
34. Li PL, Logan S, Yee L, Ng S (1999) Barriers to meeting the mental health needs of the Chinese community. J Public Health Med 21:74–80
35. Blignault I, Ponzio V, Ye R, Eisenbruch M (2008) A qualitative study of barriers to mental health services utilisation among migrants from mainland China in South-East Sydney. Int J Soc Psychiatry 54:180–190
36. Lu SH, Dear BF, Johnston L, Wootton BM, Titov N (2013) An internet survey of emotional health, treatment seeking and barriers to accessing mental health treatment among Chinese-speaking international students in Australia. Couns Psychol Q:1–13
37. Chang T, Chang R (2004) Counseling and the Internet: Asian American and Asian international college students' attitudes toward seeking online professional psychological help. J Coll Couns 7:140–149
38. Choi I, Zou J, Titov N, Dear BF, Li S, Johnston L, Andrews G, Hunt C (2012) Culturally attuned Internet treatment for depression amongst Chinese Australians: a randomised controlled trial. J Affect Disord 136:459–468

39. Lopez-del-Hoyo Y, Olivan B, Luciano-Devis J, Mayoral F, Roca M, Gili M, Andres E, Serrano-Blanco A, Collazo F, Araya R, Banos R, Botella C, Magallon R, Campayo J (2013) Low intensity vs. self-guided Internet-delivered psychotherapy for major depression: a multicenter, controlled, randomized study. BMC Psychiatry 13:21. doi:10.1186/1471-244X-13-21
40. Ince BÜ, Cuijpers P, van't Hof E, van Ballegooijen W, Riper H, Christensen H (2013) Internet-Based, culturally sensitive, problem-solving therapy for Turkish migrants with depression: randomized controlled trial. J Med Internet Res 15(10):e227. doi:10.2196/jmir.2853
41. Choi I, Andrews G, Sharpe L, Hunt C (2014) Help-seeking characteristics of Chinese- and English-speaking Australians accessing Internet-delivered cognitive behavioural therapy for depression. Soc Psychiatry Psychiatr Epidemiol (under review)
42. Kessler RC, Ustun TB (2004) The World Mental Health (WMH) survey initiative version of the world health organization (WHO) composite international diagnostic interview (CIDI). Int J Methods Psychiatr Res 13:93–121
43. Burgess PM, Pirkis JE, Slade TN, Johnston AK, Meadows GN, Gunn JM (2009) Service use for mental health problems: findings from the 2007 national survey of mental health and wellbeing. Aust N Z J Psychiatry 43:615–623
44. Mohr DC, Ho J, Duffecy J, Baron KG, Lehman KA, Jin L, Reifler D (2010) Perceived barriers to psychological treatments and their relationship to depression. J Clin Psychol 66:394–409
45. Marques L, LeBlanc NJ, Weingarden HM, Timpano KR, Jenike M, Wilhelm S (2010) Barriers to treatment and service utilization in an internet sample of individuals with obsessive–compulsive symptoms. Depress Anxiety 27:470–475
46. Titov N, Andrews G, Kemp A, Robinson E (2010) Characteristics of adults with anxiety or depression treated at an internet clinic: comparison with a national survey and an outpatient clinic. PLoS ONE 5:e10885. doi:10.1371/journal.pone.0010885
47. Kenter R, Warmerdam L, Brouwer-Dudokdewit C, Cuijpers P, Van Straten A (2013) Guided online treatment in routine mental health care: an observational study on uptake, drop-out and effects. BMC Psychiatry 13:43. doi:10.1186/1471-244X-13-43
48. Klein B, Cook S (2010) Preferences for e-mental health services amongst an online Australian sample. Eur J Appl Psychol 6:27–38
49. Casey LM, Joy A, Clough BA (2013) The impact of information on attitudes toward E-mental health services. Cyberpsychol Behav Soc Netw 16:593–598
50. Rochlen AB, Zack JS, Speyer C (2004) Online therapy: review of relevant definitions, debates, and current empirical support. J Clin Psychol 60:269–283
51. Wells M, Mitchell KJ, Finkelhor D, Becker-Blease KA (2007) Online mental health treatment: concerns and considerations. Cyberpsychol Behav 10:453–459
52. Andersson G, Carlbring P, Ljótsson B, Hedman E (2013) Guided internet-based CBT for common mental disorders. J Contemp Psychother 43:223–233
53. Gerhards SAH, Abma TA, Arntz A, de Graaf LE, Evers SMAA, Huibers MJH, Widdershoven GAM (2011) Improving adherence and effectiveness of computerised cognitive behavioural therapy without support for depression: a qualitative study on patient experiences. J Affect Disord 129:117–125
54. Mohr DC, Hart SL, Howard I, Julian L, Vella L, Catledge C, Feldman MD (2006) Barriers to psychotherapy among depressed and nondepressed primary care patients. Ann Behav Med 32:254–258
55. Parker G, Cheah YC, Roy K (2001) Do the Chinese somatize depression: a cross-cultural study. Soc Psychiatry Psychiatr Epidemiol 36:287–293
56. Yeung A, Chang D, Gresham RL Jr, Nierenberg AA, Fava M (2004) Illness beliefs of depressed Chinese American patients in primary care. J Nerv Mental Dis 192:324–327