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A randomised controlled trial on the effectiveness of screening and brief problem-solving counselling for elderly patients with undiagnosed psychological problems in primary care

Key Messages

1. Unrecognised psychological problems are common in elderly patients in primary care, and are associated with poor quality of life.
2. Opportunistic screening for psychological problems should be considered for elderly patients in primary care.
3. Primary care doctors could be effectively trained to provide brief problem-solving counselling.
4. Brief problem-solving counselling by a trained primary care doctor had a small short-term benefit on the quality of life of elderly persons, who were screened positive for psychological problems.
5. Further studies on the effectiveness of group activities and other treatments for elderly patients screened positive for psychological problems are needed.

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Introduction

Psychological problems can impair quality of life and place an enormous burden on health services. Since 2002, the US Preventive Services Task Force has recommended routine screening of adults for depression in primary care. A key determinant of the benefit of screening is the availability of effective treatment. Problem-solving counselling (PSC) has been shown to be feasible and effective for treatment of major depression, adjustment disorders, and minor depression in primary care, but it has not been tested on screened-positive psychological problems.[1-3]

The aim of this study was to determine whether screening followed by brief PSC provided by primary care doctors could improve health-related quality of life (HRQOL) and reduce the number of consultations among elderly patients in primary care with unrecognised psychological problems.

Methods

This study was conducted from November 2002 to October 2004. The study consisted of (1) a cross-sectional study to screen for unrecognised psychological problems in elderly patients in primary care, and (2) a longitudinal randomised single-blind placebo controlled trial of PSC on elderly patients screened positive for psychological problems.

Consecutive patients aged older than 60 years attending two general out-patient clinics in Hong Kong were screened using the Cantonese Hospital Anxiety and Depression Scale (HADS). Two hundred and ninety-nine subjects who had an HADS anxiety score of 3 or above or depression score of 6 or above were randomised to receive either three sessions of PSC or video-viewing (placebo). One hundred and fifty subjects, who screened negative were randomly selected to be the negative control group who did not receive any intervention. A total of six primary care doctors who were family medicine trainees provided the PSC after undergoing a standard training course of three 3-hour workshops conducted by an experienced clinical psychologist. All subjects continued to receive their usual medical care and were followed up by telephone 6, 12, 26, and 52 weeks after the initial screening by a trained interviewer (blinded to the screening result and group allocation).

Outcome measures and data analysis

The primary outcome was the change from baseline HRQOL (the SF-36 scores). Secondary outcomes included: changes from baseline HADS scores, monthly consultation rates, and the acceptability and evaluations of the PSC. The changes in the outcomes from baseline of each group was studied by a measurement epoch (week 6, 12, 26, 52) and tested by a two-sample *t* test. The longitudinal changes in outcomes in the PSC and video (placebo) groups were compared with each other and with the negative control group by a mixed effects model. Multivariate linear

Table 1. Mean (SD) changes from baseline SF-36 scores by groups

Item	Negative control				
	Week 6 (n=137)	Week 12 (n=131)	Week 26 (n=127)	Week 52 (n=112)	Week 6 (n=114)
Physical functioning	2.5 (14.7)*	2.5 (14.1)*	-0.2 (14.7)	-0.8 (16.3)	-0.3 (17.1)
Role-physical	4.6 (43.5)	2.3 (43.4)‡	4.1 (41.2)	2.2 (45.0)	7.5 (51.1)
Bodily pain	2.8 (27.9)	4.6 (24.8)*	2.8 (26.6)	0.1 (28.0)	3.6 (28.0)
General health	4.6 (19.1)*	3.0 (18.6)	0.5 (21.0)	0.1 (20.4)	6.0 (25.7)*
Vitality	-2.0 (20.9)	-3.1 (21.2)	-6.3 (22.2)*	-5.5 (21.9)*	3.9 (24.7)
Social functioning	3.4 (20.2)	1.9 (20.5)	0.0 (24.9)	-1.7 (22.8)	4.1 (33.1)
Role-emotional	-1.9 (30.7)†	-3.1 (34.5)	-4.5 (34.0)‡	-2.1 (31.7)	14.9 (51.5)*†
Mental health	-1.2 (13.5)	-2.5 (13.8)*	-5.0 (13.8)*	-5.4 (14.8)*	3.1 (19.6)
Physical component summary	2.6 (9.6)*	2.5 (8.7)*	1.7 (9.0)*	0.8 (11.1)	0.9 (12.2)
Mental component summary	-1.0 (7.2)†	-1.9 (8.4)*†	-2.7 (8.8)*‡	-2.8 (8.9)*	3.5 (12.7)*†

* Significant change in SF-36 scores from baseline by paired *t* test, P<0.05
† Significant difference in score change between PSC and negative control groups by ANOVA, P<0.05
‡ Significant difference in score change between video and negative control groups by ANOVA, P<0.05
§ Significant difference in score change between PSC and video groups by ANOVA, P<0.05

Table 2. Mean (SD) changes in the Cantonese Hospital Anxiety and Depression Scale (HADS) scores from baseline by groups

Score	Negative control					
	Week 6 (n=137)	Week 12 (n=131)	Week 26 (n=127)	Week 52 (n=112)	Week 6 (n=114)	Week 12 (n=113)
Anxiety score	0.6 (1.8)*†‡	0.6 (1.7)*†‡	0.6 (1.8)*†‡	0.5 (1.7)*†‡	-1.3 (3.8)*†	-1.4 (4.2)*†
Depression score	2.5 (4.2)*†	2.3 (3.8)*†	2.1 (3.7)*†	2.2 (3.4)*	0.5 (4.5)†	0.8 (4.7)†

* Significant change in HADS scores from baseline within the same group by parried *t* tests; P<0.05
† Significant difference in change in HADS score between PSC and negative control groups by ANOVA; P<0.05
‡ Significant difference in change in HADS score between video and negative control groups by ANOVA; P<0.05

Table 3. Effect of interventions on changes in SF-36 and the Cantonese Hospital Anxiety and Depression Scale (HADS) from corresponding baseline scores by groups*

Item	Problem-solving counselling vs control					
	Week 6	Week 12	Week 26	Week 52	Week 6	Week 12
Physical functioning	-2.98 (-6.94 to 0.97)	-4.39 (-8.61 to -0.17)†	-3.87 (-8.02 to 0.29)	-2.42 (-7.10 to 2.27)	-3.06 (-7.00 to 0.87)	-2.19 (-6.39 to 2.02)
Role-physical	-1.60 (-13.54 to 10.34)	2.08 (-9.17 to 13.33)	-6.48 (-18.28 to 5.31)	4.16 (-9.06 to 17.37)	0.54 (-11.34 to 12.43)	9.80 (-1.41 to 21.01)
Bodily pain	0.09 (-7.22 to 7.41)	-6.12 (-13.68 to 1.45)	-3.81 (-11.47 to 3.85)	-3.59 (-11.75 to 4.57)	2.04 (-5.24 to 9.32)	3.57 (-3.96 to 11.11)
General health	1.07 (-5.08 to 7.21)	1.31 (-5.15 to 7.77)	0.52 (-6.08 to 7.12)	0.73 (-5.92 to 7.38)	0.80 (-5.31 to 6.92)	4.38 (-2.06 to 10.81)
Vitality	5.11 (-0.97 to 11.19)	0.52 (-5.94 to 6.98)	-1.92 (-8.49 to 4.65)	0.68 (-6.02 to 7.38)	5.39 (-0.67 to 11.44)	2.64 (-3.80 to 9.08)
Social functioning	0.83 (-6.31 to 7.97)	-0.33 (-7.90 to 7.25)	1.02 (-6.50 to 8.54)	-0.54 (-7.63 to 6.55)	1.15 (-5.96 to 8.26)	1.96 (-5.59 to 9.51)
Role-emotional	16.98 (5.63 to 28.34)‡	14.07 (1.81 to 26.33)†	4.18 (-7.32 to 15.69)	6.97 (-5.61 to 19.55)	4.32 (-6.98 to 15.62)	8.68 (-3.54 to 20.90)
Mental health	4.78 (0.28 to 9.29)†	2.42 (-2.55 to 7.39)	2.75 (-2.43 to 7.93)	4.95 (-0.23 to 10.12)	0.79 (-3.70 to 5.27)	1.40 (-3.55 to 6.35)
Physical component summary	-2.43 (-5.14 to 0.28)	-2.95 (-5.80 to -0.11)†	-3.11 (-5.94 to -0.27)†	-1.75 (-4.94 to 1.44)	-0.79 (-3.49 to 1.90)	0.86 (-1.97 to 3.70)
Mental component summary	4.69 (1.80 to 7.57)‡	3.28 (0.22 to 6.33)†	2.32 (-0.91 to 5.55)	2.66 (-0.51 to 5.82)	2.01 (-0.86 to 4.88)	1.85 (-1.20 to 4.90)
Anxiety score	-1.73 (-2.52 to -0.95)§	-1.89 (-2.72 to -1.07)§	-2.11 (-2.94 to -1.28)§	-1.68 (-2.58 to -0.78)§	-2.22 (-2.99 to -1.44)§	-2.23 (-3.04 to -1.42)§
Depression score	-2.06 (-3.23 to -0.89)§	-1.41 (-2.56 to -0.25)†	-1.33 (-2.54 to -0.12)†	-0.98 (-2.18 to 0.22)	-1.56 (-2.71 to -0.40)	-1.22(-2.37 to -0.08)†

* Multivariate regression after controlling for age, total no. of chronic diseases, gender, education, marital status, social class by occupation, and the presence of specific chronic diagnosis. Data are shown as contrast estimate coefficients (95% confidence interval)
† P<0.05
‡ P<0.01
§ P<0.001

regressions, controlling for demographics and morbidity, were used to assess whether the PSC had an effect on the outcomes. All group analyses were by intention to treat. Statistical analyses were performed using the SAS 9 and the SPSS packages. The level of significance was taken as 0.05.

Results

A total of 1853 subjects were screened and 482 (26%) had a positive HADS score. The estimated prevalence of unrecognised psychological diseases was 23% (95% confidence interval, 13.1-33.8%) based on a sensitivity of 80% and specificity of 90% found in a previous study.[4] Multivariate linear regressions found that a positive HADS score was associated with an increase in the total number of episodic western medicine and Chinese medicine consultations, and a highly significant reduction in the SF-36 HRQOL scale (10-30 points out of a range of 100) and summary (11 points in the mental component summary and 6 points in the physical component summary) scores.

Screened-positive subjects (n=299, 62.0%) agreed to further intervention with 149 randomised to receive PSC

Problem-solving counselling (PSC)			Video (placebo)			
Week 12 (n=113)	Week 26 (n=114)	Week 52 (n=103)	Week 6 (n=117)	Week 12 (n=117)	Week 26 (n=119)	Week 52 (n=106)
-1.7 (18.9)	-3.5 (16.4)*	-3.5 (16.7)*	0.5 (14.7)	1.0 (14.9)	-0.8 (15.6)	-1.9 (16.7)
7.2 (45.0)	-0.2 (47.0)	4.9 (43.9)	11.2 (47.3)*	16.1 (42.8)*‡	4.8 (47.8)	5.6 (49.2)
-0.1 (31.0)§	0.7 (31.7)	-4.1 (30.9)§	7.1 (31.8)*	10.6 (32.5)*§	7.5 (31.8)*	8.2 (30.5)*§
5.1 (27.1)*	2.2 (26.3)	2.8 (26.7)	5.9 (26.2)*	9.0 (26.8)*	7.4 (27.6)*	4.6 (25.8)
-0.9 (27.8)	-5.1 (27.8)	-3.8 (26.0)	3.2 (25.0)	-0.2 (24.5)	-1.1 (24.8)	0.5 (23.0)
3.3 (35.6)	2.4 (30.4)	-5.0 (29.4)	6.0 (30.7)*	5.9 (31.4)*	7.1 (33.0)*	-0.6 (26.0)
11.4 (55.9)*	2.3 (51.3)	1.3 (52.6)	4.5 (51.0)	9.9 (50.1)*	10.1 (47.1)*‡	9.3 (46.4)*
0.8 (20.3)	-0.9 (23.6)	-1.2 (19.5)	0.0 (19.7)	0.3 (22.5)	-0.3 (21.8)	-1.0 (19.9)
0.3 (13.0)§	-0.6 (11.5)	-0.7 (10.9)	2.8 (10.5)*	4.3 (10.7)*§	1.8 (12.0)	1.3 (12.0)
1.9 (13.2)†	0.0 (13.9)	-0.6 (12.5)	1.0 (13.1)	0.5 (12.9)	1.4 (13.4)‡	0.4 (12.0)

Problem-solving counselling (PSC)		Video (placebo)			
Week 26 (n=114)	Week 52 (n=103)	Week 6 (n=117)	Week 12 (n=117)	Week 26 (n=119)	Week 52 (n=106)
-1.7 (4.2)*†	-1.1 (4.1)*†	-1.7 (3.2)*‡	-1.7 (3.2)*‡	-2.0 (3.2)*‡	-1.8 (3.5)*‡
0.9 (4.9)†	1.5 (4.8)*	1.0 (4.7)*	1.0 (4.7)*	1.1 (5.1)*	1.6 (4.9)*

Video vs control		Problem-solving counselling vs video			
Week 26	Week 52	Week 6	Week 12	Week 26	Week 52
-1.11 (-5.25 to 3.03)	-1.13 (-5.77 to 3.52)	0.08 (-3.95 to 4.10)	-2.21 (-6.48 to 2.07)	-2.76 (-6.92 to 1.39)	-1.29 (-5.94 to 3.36)
-4.27 (-16.02 to 7.47)	3.70 (-9.41 to 16.81)	-2.14 (-14.30 to 10.02)	-7.72 (-19.12 to 3.69)	-2.21 (-14.00 to 9.58)	0.46 (-12.66 to 13.57)
2.15 (-5.48 to 9.78)	5.96 (-2.13 to 14.06)	-1.95 (-9.39 to 5.50)	-9.69 (-17.36 to -2.02)†	-5.97 (-13.62 to 1.69)	-9.56 (-17.66 to -1.46)†
5.13 (-1.44 to 11.70)	2.45 (-4.15 to 9.05)	0.26 (-5.99 to 6.52)	-3.06 (-9.61 to 3.49)	-4.61 (-11.21 to 1.98)	-1.72 (-8.32 to 4.88)
3.35 (-3.19 to 9.90)	5.58 (-1.07 to 12.22)	-0.27 (-6.47 to 5.92)	-2.12 (-8.67 to 4.43)	-5.27 (-11.84 to 1.30)	-4.90 (-11.54 to 1.75)
5.86 (-1.63 to 13.35)	3.00 (-4.04 to 10.03)	-0.32 (-7.59 to 6.96)	-2.29 (-9.97 to 5.39)	-4.84 (-12.36 to 2.67)	-3.54 (-10.58 to 3.50)
9.30 (-2.16 to 20.75)	11.28 (-1.21 to 23.76)	12.67 (1.11 to 24.23)‡	5.39 (-7.04 to 17.83)	-5.11 (-16.61 to 6.38)	-4.31 (-16.79 to 8.18)
3.72 (-1.44 to 8.87)	4.94 (-0.20 to 10.07)	4.00 (-0.59 to 8.59)	1.02 (-4.02 to 6.06)	-0.97 (-6.14 to 4.21)	0.01 (-5.13 to 5.15)
-0.84 (-3.66 to 1.99)	0.07 (-3.09 to 3.23)	-1.64 (-4.39 to 1.12)	-3.81 (-6.70 to -0.93)‡	-2.27 (-5.10 to 0.56)	-1.82 (-4.98 to 1.35)
3.75 (0.54 to 6.97)†	3.68 (0.54 to 6.83)†	2.67 (-0.26 to 5.61)	1.42 (-1.68 to 4.53)	-1.43 (-4.66 to 1.79)	-1.03 (-4.17 to 2.11)
-2.52 (-3.34 to -1.69)§	-2.34 (-3.24 to -1.44)§	0.48 (-0.31 to 1.27)	0.34 (-0.49 to 1.16)	0.41 (-0.42 to 1.24)	0.66 (-0.23 to 1.55)
-1.22 (-2.42 to -0.01)†	-0.91 (-2.10 to 0.29)	-0.50 (-1.69 to 0.68)	-0.18 (-1.34 to 0.98)	-0.11 (-1.32 to 1.09)	-0.08 (-1.27 to 1.11)

and 150 to receive the video (placebo) intervention. One hundred and fifty subjects who were screened negative, were allocated to the negative control group. Screened-positive subjects had a higher proportion of persons with more than two chronic diseases and worse SF-36 HRQOL scores than screened-negative subjects. There was no difference between the PSC and video (placebo) groups except for a higher mean HADS depression score in the former. One hundred and thirty-two (89%) subjects in the PSC group attended at least one of their respective sessions, as did 132 (88%) of the video (placebo) group. A total of 69% subjects of the PSC group, 71% of those in the video group, and 74% of the screened-negative controls completed the study at 52 weeks.

Table 1 shows the changes in SF-36 scores from baseline to follow-up assessments at 6, 12, 26, and 52 weeks by groups, with missing data excluded from the analysis. There were significant improvements in the SF-36 mental component summary and role-emotional scores at week 6 in the PSC group, which were not found in the video (placebo) or screened-negative control groups. At subsequent follow-up, there were no significant differences in the change in SF-36 scores, except for greater improvements in the

bodily pain score at 12 and 52 weeks, and in the physical component summary score at 12 weeks in the video group.

Table 2 shows the change in HADS scores by groups, with missing data excluded from analysis. The anxiety scores at 6, 12, 26 and 52 weeks were significantly lower (improved) compared to baseline in both PSC and video groups, but were higher (worse) in the negative control group. There was no significant change in the depression score with time in the PSC group except for a higher score at 52 weeks, but the depression scores were significantly higher in the video (placebo) and negative control groups at all follow-up assessments.

There was no significant change in the monthly consultation rates with time in all groups, whether the missing data were excluded or replaced by the last available values in the analyses.

Table 3 shows the results of multivariate linear regressions of the changes in SF-36 and HADS scores following different interventions. Problem-solving counselling significantly improved the role-emotional score at week 6 more than the video (placebo), but was significantly less effective in improving general health and physical component summary scores at 12 weeks and the bodily pain score at 52 weeks.

Mixed effects analysis for HADS scores, SF-36 scores, and consultation rates showed that changes in some SF-36 (bodily pain, social functioning, and physical component summary) and HADS anxiety scores were associated with the intervention effects, with the video group improving more than the PSC group. Mixed proportional odds analysis was used for the SF-36 role-emotional score that took on four different values (0/33.3/66.7/100). The group by week interaction was significant and the effect of PSC appeared to decline over time (P=0.01). The video and PSC groups yielded no significant difference at weeks 6 and 12 but the video group improved more (starting from week 26).

A random sample of the PSC sessions of 18 subjects was reviewed by the clinical psychologist. Each of the three tasks was achieved in over 80% of the sessions and a positive impact on the patient was noted in over 90% of the sessions.

Post-intervention evaluation by the elderly showed that 73% of them wished their family doctors could provide PSC; 38% and 49% thought PSC and video-viewing respectively, improved their psychological health. Significantly more subjects in the video group (51%) than in the PSC group (33%) thought the intervention improved their general health.

Discussion

Unrecognised psychological problems were common among Chinese elderly patients attending primary care and appeared to impair quality of life as much as clinically diagnosed psychiatric diseases.[5] Their psychological problems were unrecognised, despite their more frequent consultations, which implies that doctors seemed to have missed the opportunity to detect them. Opportunistic screening of psychological problems in elderly patients in primary care should be considered, so that appropriate treatment can be given early.

Brief PSC by a trained primary care doctor had a short-term (6- and 12-week) benefit on the quality of life of elderly patients who were screened positive for psychological problems, although it was not more effective than placebo (video-viewing) in the long term. The depression score did not increase in the PSC group, and in both the video and negative control groups until week 52, suggesting that PSC might have slowed the deterioration of depressive symptoms.

Problem-solving counselling did not seem to be as effective in our patients as reported in another study,[1] probably because our subjects were older and had milder problems. The effect might be more sustainable if PSC could be reinforced and continued by the patients' own primary care doctors.

Other treatment methods for screened-positive psychological problems should be explored. Viewing of health education videos in groups unexpectedly improved quality of life compared with no intervention. The effectiveness of simple group activities in the treatment of screened-positive psychological problems deserves further studies.

This study showed that primary care doctors could acquire the skills of PSC after a short course of training. Similar courses can be incorporated into vocational and continuing medical education programmes for primary care doctors, so that the large number of elderly patients with psychological problems can be managed in primary care.

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