

Supplementary Data

Supplementary File S1. Description of Instrument Selection Process

The selection process for the used instruments consisted of 3 steps. First, input was gathered from national experts associated with the studied Population Management Initiatives regarding possible instruments for measuring the following concepts: quality of life, self-management, health literacy and psychological well-being. Second, the suggested instruments were aggregated and evaluated based on literature. For each instrument advantages, disadvantages, validity, time needed and target population were determined. Third, these results were evaluated by the authors of the report,¹ as well as experts of the studied nine pioneer sites. The final instruments were selected in consultation between both groups. The decisive factors were mostly the evidence of the supporting literature regarding validity and reliability, and the use by other Dutch institutions.

SUPPLEMENTARY TABLE S1.1. CONSIDERED INSTRUMENTS FOR INCLUSION IN QUESTIONNAIRE

<i>Concept</i>	<i>Instrument</i>
Quality of life	Short Form 12 EuroQol 5 Dimensions EuroQol 6 Dimensions Social Production Function IL World Health Organization 5 Promis Global Health
Self-management	Patient Assessment of Chronic Illness Care Patient Assessment of Self-management Tasks Patient Activation Measure 13 Self-Management Screening Questionnaire Self-Management Ability Scale
Health literacy Psychological well-being	Set of Brief Screening Questions Kessler 10

IL, instrument for the level of well-being.

Supplementary File S2. Results of Multiple Imputed Datasets

SUPPLEMENTARY TABLE S2.1. COMPARISON OF CHARACTERISTICS OF MISSING VALUE GROUPS

Instrument Group	SF12		PAM13		K10	
	No missing	≥1 missing	No missing	≥1 missing	No missing	≥1 missing
N (%)	2146 (68.8%)	974 (31.2%)	2886 (92.5%)	234 (7.5%)	2962 (94.9%)	158 (5.1%)
Gender (% male)	46.5	45.6	46.7	40.1	46.5	40.1
Average age	54.2	59.1**	55.4	59.0*	55.5	59.0*
Education (% highly educated)	27.6	24.7	27.3	19.2*	26.9	22.8
Origin (% native)	87.2	85.6	86.7	86.7	86.7	87.7
Employed (% paid job)	53.1	41.9**	50.0	43.5	49.9	43.4
Disabled (% 100% disabled)	3.8	4.7	4.1	4.3	4.0	6.6
Average BMI	25.9	26.1	25.9	26.3	25.9	26.6
Alcohol use (% alcohol consumers)	59.4	58.4	59.6	51.7*	59.6	47.1*
Smoking (% smokers)	18.0	16.8	17.6	18.6	17.6	18.4
Health Literacy	3.4*	3.3*	3.4	3.4	3.4	3.3

*t-test (sig ≤0.05).

**t-test (sig <0.001).

BMI, body mass index; K10, Kessler 10; PAM13, Patient Activation Measure 13; SF12, Short Form 12 version 2.

SUPPLEMENTARY TABLE S2.2. DESCRIPTIVES OF SUM SCORES OF THE SF12, PAM13 AND K10

	SF12-PCS	SF12-MCS	PAM13 (MI based results)	K10 (MI based results)
Average	NA	NA	59.1	16.6
Median	NA	NA	55.6	14.0
Standard Deviation	NA	NA	18.1	7.0
Variance	NA	NA	329.2	49.6
Minimum	NA	NA	0.0	10.0
Maximum	NA	NA	100.0	48.0
25%	NA	NA	48.9	11.0
50%	NA	NA	55.6	14.0
75%	NA	NA	67.8	19.0

K10, Kessler 10; MCS, Mental Component Score; MI, multiple imputation; NA, not available; PAM13, Patient Activation Measure 13; PCS, Physical Component Score; SF12, Short Form 12 version 2.

SUPPLEMENTARY TABLE S2.3. VALIDITY AND RELIABILITY TEST RESULTS OF THE SF12, PAM13 AND K10

	SF12 ^b	PAM13 (MI based results)	K10 (MI based results)
Construct validity			
Chi-squared	NA	869.6**	1295.6**
NNFI	NA	0.839	0.899
CFI	NA	0.876	0.921
RMSEA	NA	0.099	0.107
Discriminant validity			
Mean difference between ≤75 and >75 years	NA	2.0	-1.5*
Mean difference between non-highly and highly educated	NA	-7.5**	-1.8**
Reliability			
Cronbach's alpha	0.93–0.93	0.89–0.89	0.93–0.93
Guttman's Lambda 6	0.94–0.95	0.90–0.91	0.93–0.93
Split-half	0.93–0.93	0.88–0.89	0.92–0.92

CFI, Comparative Fit Index; K10, Kessler 10; MI, multiple imputation; NA, not available; NNFI, Non-Normed Fit Index; PAM13, Patient Activation Measure 13; RMSEA, Root Mean Squared Error of Approximation; SF12, Short Form 12 version 2.

SUPPLEMENTARY TABLE S2.4. CORRECTED ITEM-TOTAL
CORRELATION OF THE SHORT FORM 12

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	General health	0.55–0.56
2	Moderate activities	0.51–0.52
3	Climb several flights of stairs	0.50–0.51
4	Accomplished less (physical)	0.59–0.60
5	Limited in kind of work	0.57
6	Accomplished less (emotional)	0.65–0.66
7	Did work less careful	0.63–0.64
8	Pain – interference	0.62–0.63
9	Calm and peaceful	0.49–0.52
10	Energy	0.55–0.57
11	Downhearted and blue	0.36–0.38
12	Social limitations	0.52–0.53

SUPPLEMENTARY TABLE S2.6. CORRECTED ITEM-TOTAL
CORRELATION OF THE PATIENT ACTIVATION MEASURE 13

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	Own responsibility	0.49
2	Active role	0.54–0.55
3	Confidence of own contribution	0.60–0.61
4	Knowledge of medication	0.51
5	Confident when to go see a physician	0.62
6	Confident to tell physician worries	0.54–0.55
7	Confident to perform medical treatment at home	0.61–0.62
8	Understanding of health issues and reasons	0.63–0.64
9	Knowledge of possible treatments	0.64–0.65
10	Change in lifestyle	0.57–0.58
11	Understanding of what is preventable	0.67–0.68
12	Confident to come up with solutions	0.63
13	Change in lifestyle - stress	0.58–0.59

SUPPLEMENTARY TABLE S2.5. CORRECTED ITEM-TOTAL
CORRELATION OF THE KESSLER 10

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	Tired	0.61–0.62
2	Nervous	0.69
3	Nervous – rest	0.74–0.75
4	Hopeless	0.78–0.79
5	Restless	0.74–0.75
6	Restless – unable to sit still	0.66–0.67
7	Somber/depressed	0.78–0.79
8	Too much effort	0.74–0.75
9	Unable to be cheered up	0.79–0.80
10	Reprehensible, inferior or worthless	0.70–0.71

Supplementary File S3. Descriptives of Responses

SUPPLEMENTARY TABLE S3.1. RESPONSE RATE OF SHORT FORM 12 (TOTAL N=3120)

<i>Item</i>	<i>Question</i>	<i>N</i>	<i>Response rate (%)</i>	<i>Respondents with lowest score (%)</i>	<i>Respondents with highest score (%)</i>
1	General health	3094	99.2	3.1	11.3
2	Moderate activities	2957	94.8	8.2	66.2
3	Climb several flights of stairs	2918	93.5	7.2	66.1
4	Accomplished less (physical)	2788	89.4	4.9	33.5
5	Limited in kind of work	2752	88.2	4.6	36.9
6	Accomplished less (emotional)	2754	88.3	2.8	43.4
7	Did work less careful	2713	87.0	2.1	43.7
8	Pain – interference	2971	95.2	2.9	45.2
9	Calm and peaceful	2938	94.2	1.5	16.4
10	Energy	2933	94.0	2.6	13.2
11	Downhearted and blue	2942	94.3	1.3	31.0
12	Social limitations	3001	96.2	2.4	45.4

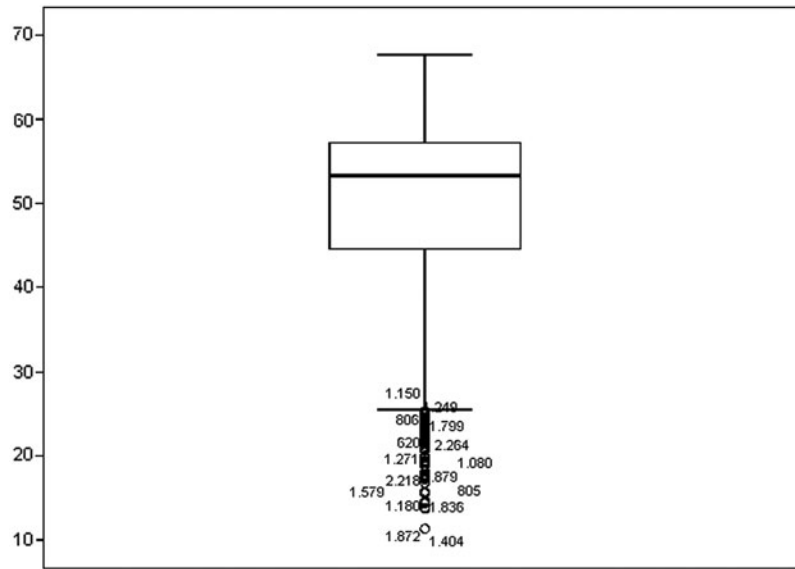
SUPPLEMENTARY TABLE S3.2. RESPONSE RATE OF PATIENT ACTIVATION MEASURE 13 (TOTAL N=3120)

<i>Item</i>	<i>Question</i>	<i>N</i>	<i>Response rate (%)</i>	<i>Respondents with lowest score (%)</i>	<i>Respondents with highest score (%)</i>	<i>% not applicable</i>
1	Own responsibility	3059	98.0	3.0	37.5	2.4
2	Active role	3045	97.6	1.7	28.4	12.3
3	Confidence of own contribution	3040	97.4	2.1	29.6	4.6
4	Knowledge of medication	3049	97.7	1.5	23.6	32.6
5	Confident when to go see a physician	3046	97.6	1.3	35.8	2.4
6	Confident to tell physician worries	3051	97.8	1.8	37.2	4.3
7	Confident to perform medical treatment at home	3050	97.8	1.4	28.5	18.2
8	Understanding of health issues and reasons	3052	97.8	1.6	23.1	25.4
9	Knowledge of possible treatments	3043	97.5	2.2	17.7	28.1
10	Change in lifestyle	3046	97.6	1.4	21.9	19.3
11	Understanding of what is preventable	3037	97.3	1.9	23.2	6.9
12	Confident to come up with solutions	3045	97.6	3.5	14.2	12.7
13	Change in lifestyle - stress	3054	97.9	2.8	20.5	9.0

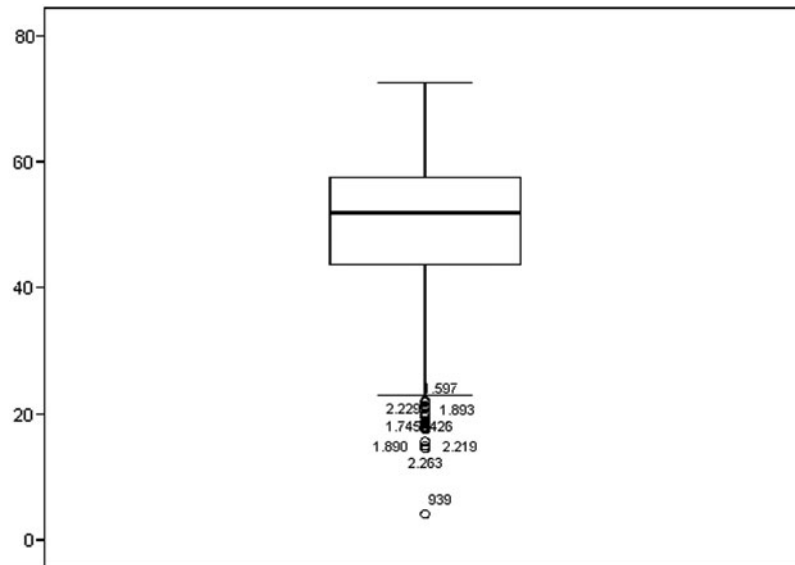
SUPPLEMENTARY TABLE S3.3. RESPONSE RATE OF KESSLER 10 (TOTAL N=3120)

<i>Item</i>	<i>Question</i>	<i>N</i>	<i>Response rate (%)</i>	<i>Respondents with lowest score (%)</i>	<i>Respondents with highest score (%)</i>
1	Tired	3068	98.3	2.1	36.4
2	Nervous	3067	98.3	0.7	40.1
3	Nervous – rest	3062	98.1	0.4	66.1
4	Hopeless	3060	98.1	0.8	71.6
5	Restless	3057	98.0	0.6	43.2
6	Restless – unable to sit still	3054	97.9	0.4	69.5
7	Somber/depressed	3067	98.3	0.7	59.3
8	Too much effort	3053	97.9	2.3	45.6
9	Unable to be cheered up	3060	98.1	0.5	72.8
10	Reprehensible, inferior or worthless	3065	98.2	0.9	70.0

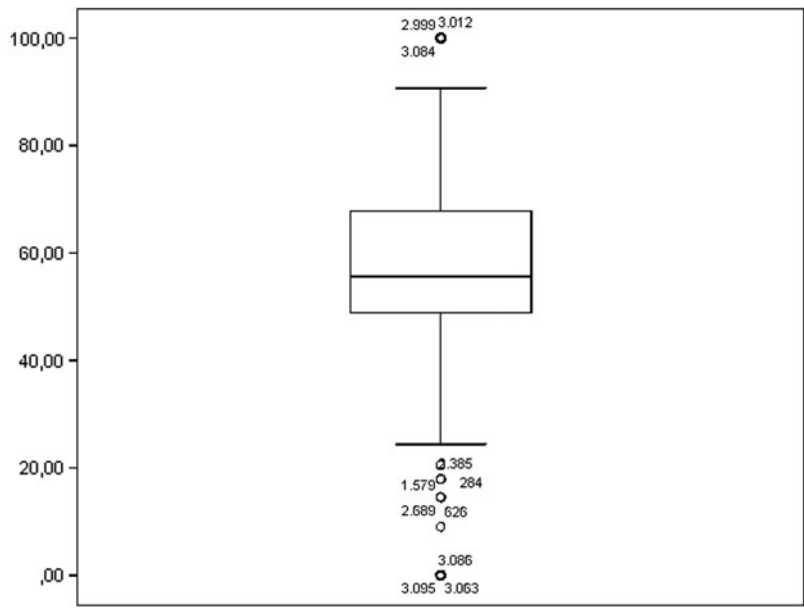
Supplementary File S4. Boxplots of Studied Instruments



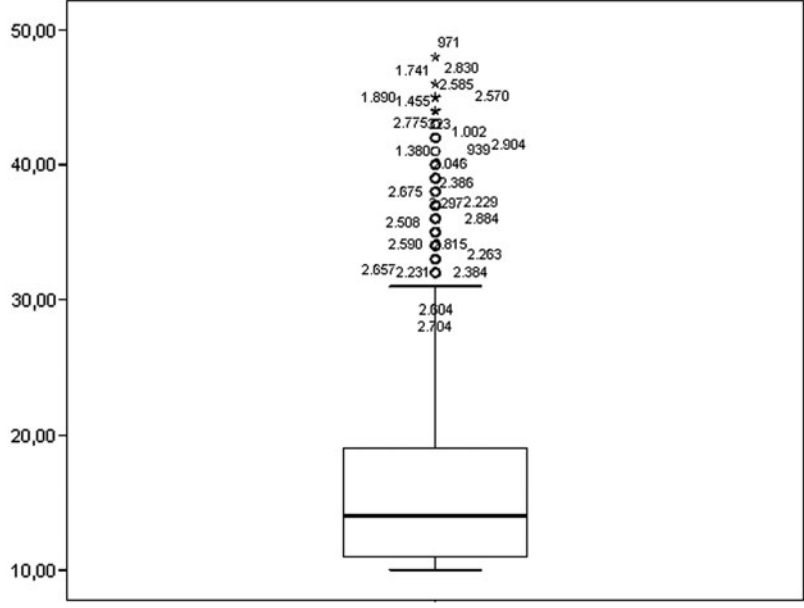
SUPPLEMENTARY FIG. S4.1. Boxplot of sumscores Short Form 12 - Physical Component Score



SUPPLEMENTARY FIG. S4.2. Boxplot of sumscores Short Form 12 - Mental Component Score



SUPPLEMENTARY FIG. S4.3. Boxplot of sumscores Patient Activation Measure 13

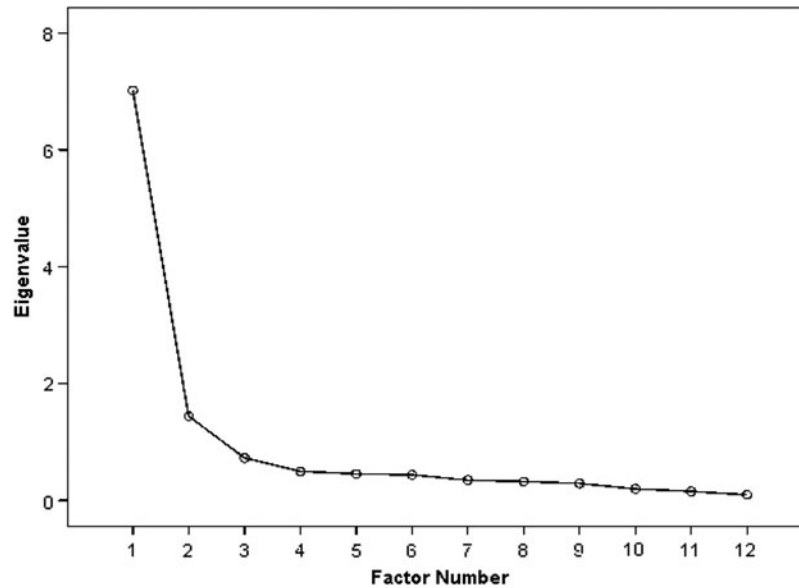


SUPPLEMENTARY FIG. S4.4. Boxplot of sumscores Kessler 10

Supplementary File S5. Results of Exploratory Factor Analyses

SUPPLEMENTARY TABLE S5.1. FACTOR LOADINGS OF EXPLORATORY FACTOR ANALYSES SHORT FORM 12

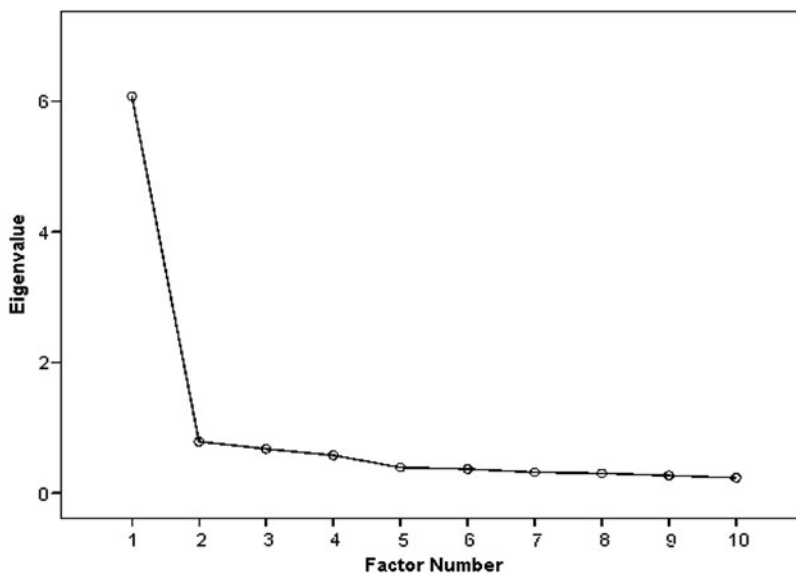
<i>Item</i>	<i>Question</i>	<i>Factor</i>	
		<i>1</i>	<i>2</i>
1	General health	-0.687	0.163
2	Moderate activities	0.766	-0.312
3	Climb several flights of stairs	0.723	-0.281
4	Accomplished less (physical)	0.889	-0.233
5	Limited in kind of work	0.880	-0.290
6	Accomplished less (emotional)	0.776	0.502
7	Did work less careful	0.763	0.461
8	Pain – interference	-0.742	0.259
9	Calm and peaceful	-0.604	-0.200
10	Energy	-0.705	-0.015
11	Downhearted and blue	0.511	0.379
12	Social limitations	0.775	0.091



SUPPLEMENTARY FIG. S5.1. Screenplot of exploratory factor analyses Short Form 12

SUPPLEMENTARY TABLE S5.2. ROTATED FACTOR LOADINGS
OF EXPLORATORY FACTOR ANALYSES SHORT FORM 12

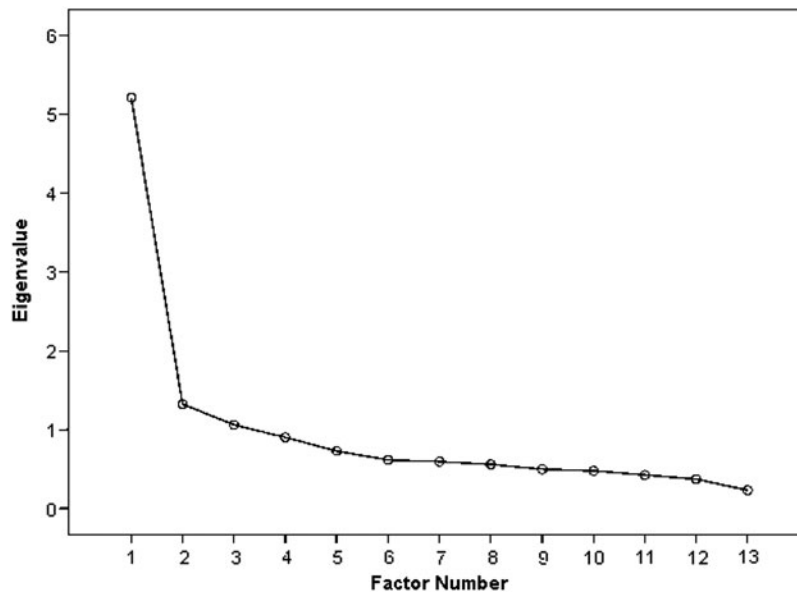
Item	Question	Factor	
		1	2
1	General health	-0.637	-0.303
2	Moderate activities	0.792	0.236
3	Climb several flights of stairs	0.740	0.234
4	Accomplished less (physical)	0.839	0.375
5	Limited in kind of work	0.868	0.325
6	Accomplished less (emotional)	0.291	0.878
7	Did work less careful	0.307	0.837
8	Pain – interference	-0.741	-0.262
9	Calm and peaceful	-0.346	-0.534
10	Energy	-0.540	-0.453
11	Downhearted and blue	0.161	0.615
12	Social limitations	0.547	0.556



SUPPLEMENTARY FIG. S5.2. Screenplot of exploratory factor analyses Kessler 10

SUPPLEMENTARY TABLE S5.3. FACTOR LOADINGS
OF EXPLORATORY FACTOR ANALYSES KESSLER 10

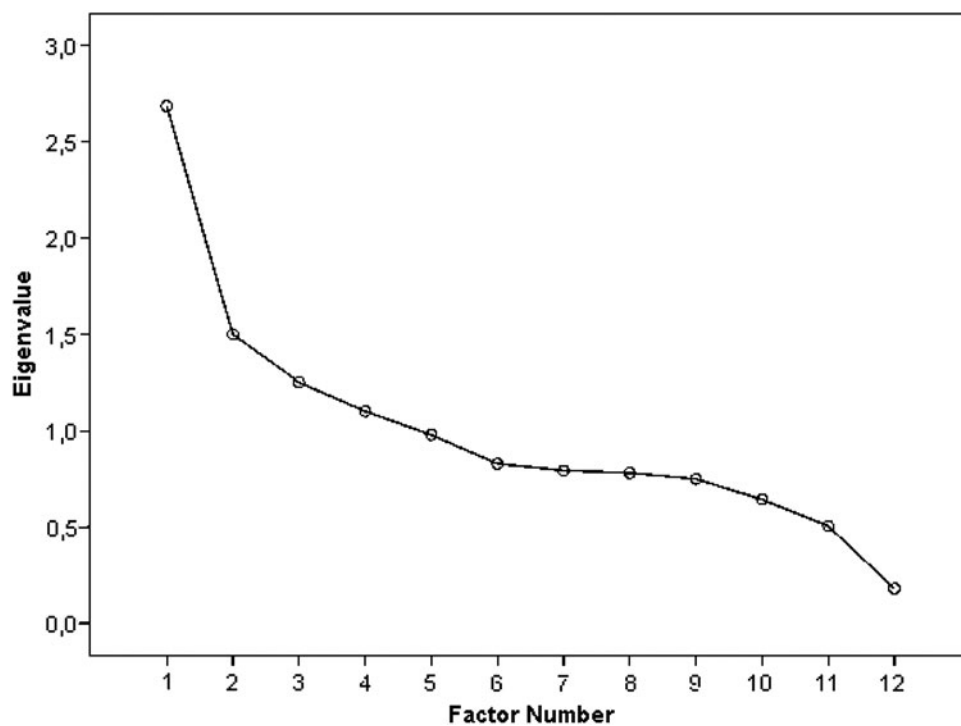
<i>Item</i>	<i>Question</i>	<i>Factor</i> 1
1	Tired	0.626
2	Nervous	0.709
3	Nervous – rest	0.756
4	Hopeless	0.824
5	Restless	0.755
6	Restless – unable to sit still	0.672
7	Somber/depressed	0.828
8	Too much effort	0.751
9	Unable to be cheered up	0.832
10	Reprehensible, inferior or worthless	0.737



SUPPLEMENTARY FIG. S5.3. Screenplot of exploratory factor analyses Patient Activation Measure 13

SUPPLEMENTARY TABLE S5.4. FACTOR LOADINGS
 OF EXPLORATORY FACTOR ANALYSES PATIENT
 ACTIVATION MEASURE 13

<i>Item</i>	<i>Question</i>	<i>Factor 1</i>
1	Own responsibility	0.428
2	Active role	0.415
3	Confidence of own contribution	0.542
4	Knowledge of medication	0.560
5	Confident when to go see a physician	0.541
6	Confident to tell physician worries	0.487
7	Confident to perform medical treatment at home	0.585
8	Understanding of health issues and reasons	0.751
9	Knowledge of possible treatments	0.756
10	Change in lifestyle	0.581
11	Understanding of what is preventable	0.651
12	Confident to come up with solutions	0.682
13	Change in lifestyle - stress	0.613



SUPPLEMENTARY FIG. S5.5. Screenplot overall exploratory factor analysis

SUPPLEMENTARY TABLE S5.5. STRUCTURE MATRIX OF OVERALL EXPLORATORY FACTOR ANALYSIS

	<i>Factor</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Employed	0.041	0.377	-0.011	0.119
Disabled	-0.205	-0.378	0.014	-0.124
BMI	0.079	-0.200	-0.131	-0.186
Alcohol use	0.031	0.112	0.633	0.172
Daily exercise	0.096	0.047	0.052	0.227
Smoking status	0.061	0.061	-0.339	0.022
Health literacy	0.176	0.254	0.092	0.384
Care use	-0.165	-0.529	-0.057	-0.210
PCS	-0.054	0.859	0.036	0.348
MCS	0.915	0.180	-0.009	0.406
PAM13 score	0.166	0.220	-0.017	0.623
K10 score	-0.800	-0.410	-0.015	-0.451

BMI, body mass index; K10, Kessler 10; MCS, Mental Component Score; PAM13, Patient Activation Measure 13; PCS, Physical Component Score.

SUPPLEMENTARY TABLE S5.6. STRUCTURE MATRIX OF OVERALL EXPLORATORY FACTOR ANALYSIS WITHOUT KESSLER 10

	<i>Factor</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
PCS	-0.196	0.790	0.034	0.335
MCS	0.936	0.222	-0.007	0.442
Alcohol use	-0.002	0.107	0.613	0.174
Smoking status	0.052	0.062	-0.349	0.024
Daily exercise	0.077	0.038	0.055	0.223
Employment	-0.023	0.409	-0.015	0.123
Disabled	-0.119	-0.393	0.018	-0.130
Care use	-0.070	-0.569	-0.060	-0.207
PAM13 score	0.089	0.227	-0.020	0.628
Health Literacy	0.094	0.257	0.090	0.386
BMI	0.108	-0.210	-0.132	-0.177

BMI, body mass index; MCS, Mental Component Score; PAM13, Patient Activation Measure 13; PCS, Physical Component Score.

SUPPLEMENTARY TABLE S5.7. ROTATED MATRIX OF OVERALL EXPLORATORY FACTOR ANALYSIS WITHOUT KESSLER 10

	<i>Factor</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
PCS	-0.146	0.602	-0.014	0.196
MCS	0.989	0.138	-0.036	0.279
Alcohol use	-0.043	0.023	0.556	0.096
Smoking status	0.006	0.016	-0.228	-0.003
Daily exercise	-0.024	-0.014	0.030	0.099
Employment	-0.014	0.127	-0.023	-0.009
Disabled	0.002	-0.118	0.022	0.035
Care use	0.020	-0.212	-0.030	0.021
PAM13 score	-0.118	-0.002	-0.040	0.455
Health Literacy	-0.047	0.040	0.050	0.160
BMI	0.032	-0.048	-0.072	-0.078

BMI, body mass index; MCS, Mental Component Score; PAM13, Patient Activation Measure 13; PCS, Physical Component Score.

SUPPLEMENTARY TABLE S5.8. PATTERN MATRIX OF OVERALL EXPLORATORY FACTOR ANALYSIS CONDUCTED AMONG PARTICIPANTS <65

	<i>Factor</i>			
	<i>Mental</i>	<i>Physical ability</i>	<i>Lifestyle</i>	<i>Self-management</i>
Employed	-0.067	0.431	0.015	-0.013
Disabled	-0.133	0.521	0.037	0.073
BMI	0.126	0.172	-0.091	-0.152
Alcohol use	0.041	-0.088	0.571	0.043
Daily exercise	0.029	0.060	0.011	0.174
Smoking status	0.011	-0.087	-0.393	0.059
Health literacy	0.064	-0.102	0.036	0.301
Care use	-0.114	0.572	-0.056	0.039
SF12 PCS	0.247	0.803	0.082	-0.094
SF12 MCS	0.922	-0.031	0.026	0.170
PAM13 score	0.015	-0.055	-0.115	0.615
K10 score	0.690	-0.287	0.008	0.175

BMI, body mass index; K10, Kessler 10; MCS, Mental Component Score; PAM13, Patient Activation Measure 13; PCS, Physical Component Score; SF12, Short Form 12 version 2.

SUPPLEMENTARY TABLE S5.8. PATTERN MATRIX OF OVERALL EXPLORATORY FACTOR ANALYSIS CONDUCTED AMONG PARTICIPANTS ≥65

	<i>Factor</i>			
	<i>Mental</i>	<i>Physical ability</i>	<i>Lifestyle</i>	<i>Self-management</i>
Employed	-0.071	-0.007	0.086	-0.071
Disabled	-0.108	0.142	-0.028	0.054
BMI	0.053	0.025	-0.061	-0.259
Alcohol use	0.117	-0.061	0.984	0.071
Daily exercise	0.177	-0.064	0.026	0.286
Smoking status	-0.003	-0.025	-0.226	-0.029
Health literacy	0.328	-0.103	0.080	0.232
Care use	0.035	0.301	0.055	-0.307
SF12 PCS	0.095	0.971	0.052	-0.163
SF12 MCS	0.798	0.112	-0.008	0.096
PAM13 score	0.219	-0.015	-0.053	0.399
K10 score	0.965	-0.175	0.008	-0.144

BMI, body mass index; K10, Kessler 10; MCS, Mental Component Score; PAM13, Patient Activation Measure 13; PCS, Physical Component Score; SF12, Short Form 12 version 2.

Supplementary File S6. Results of Convergent Validity Tests

SUPPLEMENTARY TABLE S6.1. CORRECTED ITEM-TOTAL CORRELATION OF THE SHORT FORM 12

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	General health	0.676
2	Moderate activities	0.731
3	Climb several flights of stairs	0.691
4	Accomplished less (physical)	0.825
5	Limited in kind of work	0.808
6	Accomplished less (emotional)	0.719
7	Did work less careful	0.708
8	Pain – interference	0.709
9	Calm and peaceful	0.635
10	Energy	0.722
11	Downhearted and blue	0.519
12	Social limitations	0.780

SUPPLEMENTARY TABLE S6.3. CORRECTED ITEM-TOTAL CORRELATION OF THE PATIENT ACTIVATION MEASURE 13

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	Own responsibility	0.463
2	Active role	0.541
3	Confidence of own contribution	0.580
4	Knowledge of medication	0.519
5	Confident when to go see a physician	0.622
6	Confident to tell physician worries	0.540
7	Confident to perform medical treatment at home	0.619
8	Understanding of health issues and reasons	0.649
9	Knowledge of possible treatments	0.667
10	Change in lifestyle	0.561
11	Understanding of what is preventable	0.665
12	Confident to come up with solutions	0.627
13	Change in lifestyle - stress	0.577

Reference

1. Drewes HW, Heijink R, Struijs JN, Baan CA. Samen werken aan duurzame zorg. Landelijke monitor proeftuinen. Bilthoven, Netherlands: National Institute for Public Health and the Environment, 2015.

SUPPLEMENTARY TABLE S6.2. CORRECTED ITEM-TOTAL CORRELATION OF THE KESSLER 10

<i>Item</i>	<i>Question</i>	<i>Corrected item-total correlation</i>
1	Tired	0.613
2	Nervous	0.687
3	Nervous – rest	0.732
4	Hopeless	0.778
5	Restless	0.736
6	Restless – unable to sit still	0.645
7	Somber/depressed	0.776
8	Too much effort	0.737
9	Unable to be cheered up	0.784
10	Reprehensible, inferior or worthless	0.693