**PUBLIC RELEASE: 16-MAY-2016**

Email-based exercises could improve mental health long-term

Public health interventions conducted via email could improve mental health in an easily accessible and cost-effective way, according to a study published in the open access journal *BMC Psychology*.

Researchers at the National Institute for Health and Welfare, Finland and Duodecim Medical Publications recruited 73,054 participants by aid of a Finnish reality TV program presented between October 2012 and January 2013, to explore the feasibility of internet-based interventions for improving well-being in the general population, as well as their short term and long term effects.

The TV program followed five Finnish celebrities who were being trained by coaches to improve their well-being. The program advertised a website that allowed people to fill out a questionnaire about their health, lifestyle, psychological well-being and resilience to stress.

Out of the 73,054 initial respondents, 42,761 (58.4%) started email-based exercises designed to help them increase their wellbeing and enhance their ability to cope with stress. Of the people who chose these interventions, 16,499 participated in at least one follow up. People who did not choose interventions served as controls.

Minna Torniainen-Holm, the corresponding author, said: "Mental health promotion should be a public health priority and internet-based interventions should be made available for people interested in improving their psychological wellbeing and lifestyle, as they appear to be a good way of promoting mental health. They are easy to access with a potential to reach and engage a large number of people at lower cost than face-to-face services."

The researchers found that people who chose email-based training for mental health showed improvements in levels of stress, confidence in the future and gratitude at both two-month and two-year follow ups.

All study participants received the same intervention based on solution-focused therapy, cognitive behavioral therapy and positive psychology, intended to increase wellbeing and enhance their ability to cope with stress. Additionally, participants were offered a choice of interpersonal or lifestyle interventions.

Participants who completed the email exercises according to the instructions they were given, showed the most sustained improvement in psychological health at the two-year follow. People who chose additional interpersonal interventions, such as improving social relationships or solving conflicts, showed improvements in confidence in the future and gratitude at both follow-up points. People who started lifestyle interventions, which included smoking cessation, weight management or physical exercise, showed these improvements only at the two-month follow up. Members of all groups increased their daily intake of fruit and vegetables and their levels of exercise.

Minna Torniainen-Holm said: "We were delighted to see that the effects of the interventions appeared to be consistent across all measures of wellbeing, and that small effects were observed even two years later. These results suggest that the improvement may be long-lasting."

The researchers observed high drop-out rates (84.1% - 88.3%) in the intervention and the control group between the initial survey and both follow-ups. Drop out was associated with being male, completing fewer years of education, binge drinking, daily smoking, less physical exercise and an unhealthier diet.

Participants who chose to take part in the interventions tended to be slightly younger than controls, they had completed more years of education, were more often employed and in a relationship. They also binge drank less, smoked less and ate fruit and vegetables more often than the control group. They had less confidence in the future, fewer feelings of gratitude and more stress at baseline. They were less active physically. Women chose interventions more often than men.

People aged 18 years and over completed the initial questionnaire which was followed up with similar questionnaires two months and two years later. All respondents received a feedback report, which included estimates of life expectancy and various diseases, as well as the impact of a person's life habits on health and ways to influence them.

When asked at the two-year follow up, most study participants had not done the intervention exercises as instructed. Doing the exercises as instructed was associated with higher and more lasting improvements in stress, confidence in the future and gratitude. While both the intervention and the control groups showed improvements in mental health and lifestyle, the effects were more marked in the intervention group.

Experimental studies, such as this, allow us to find out if an intervention is effective. However, the study groups were not representative of the Finnish population, as most of the respondents were women with relatively high levels of education and a healthier lifestyle than the general population. The study may also be limited by the large drop-out rate, a lack of randomization and the inability to control for confounding factors that might influence stress levels.