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Efficacy of an app-based treatment for anxiety disorders including exposure in virtual reality – a randomized controlled trial

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doi: 10.1192/j.eurpsy.2023.300

Introduction: Anxiety disorders are among the most prevalent mental disorders. However, only a minority of patients receives adequate psychotherapeutic treatment despite strong empirical evidence for the efficacy of CBT in anxiety disorders (Marcks *et al.* Psychiatr Serv 2009; 60 823-830). App-based psychotherapy can help to reduce this massive treatment gap.
Objectives: We aimed at evaluating the efficacy of an app-based treatment for anxiety disorders including exposure in virtual reality.
Methods: The randomized controlled trial was conducted in two university outpatient treatment centers in Northern Germany. Patients were diagnosed with agoraphobia (AP; with or without panic disorder; n=103), panic disorder (PD; n=84) or social anxiety disorder (SAD; n=110) and were randomly assigned to either the app-based intervention or treatment as usual (up to 6 sessions of supportive therapy). The app was developed based on evaluated CBT manuals and includes 14 hours of audio and video content and 15 disorder specific virtual reality exposure scenarios. Participants in the intervention groups also received two appointments with a therapist during the app-based treatment. Primary outcome was the change in Beck Anxiety Inventory (BAI) score pre to post (after 6 months). Mixed ANOVAs were conducted in intention to treat and completer analyses. Secondary outcomes were disorder specific questionnaires (Liebowitz Social Anxiety Scale LSAS for SAD and Panic and Agoraphobia Scale PAS for AP and PD) and health related quality of life measured with a single item (L-1).
Results: In the ITT analysis, the interaction effect between group and time was significant in patients with AP as well as in patients with PD (AP: p=.014, partial η^2=.06; PD: p=.028, partial η^2=.06). This indicates a stronger improvement of symptoms in the intervention group compared to the control group. In patients with SAD, there was no significant interaction effect (p=.101, partial η^2=.03). The disorder specific measures LSAS and PAS showed a significantly stronger decrease in the intervention group than in the control group for each of the specific disorders. Concerning quality of life, a stronger improvement in the intervention group was only found in patients with PD.
Conclusions: A stronger symptom reduction in the app-based intervention group compared to the control group could be found in patients with AP (BAI/PAS), PD (BAI/PAS) and SAD (LSAS). This is particularly remarkable as the app was compared to an active control group with up to 6 sessions of psychotherapy. Effect sizes were comparable to those found in studies comparing face-to-face CBT to an active control group. The lack of an intervention-specific effect on BAI scores in patients with SAD might be due to the poor sensitivity of the BAI for the specific symptoms of SAD.

Disclosure of Interest: None Declared

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Vickybot, a chatbot for anxiety-depressive symptoms and work-related burnout

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doi: 10.1192/j.eurpsy.2023.301

Introduction: A significant proportion of people attending Primary Care (PC) have anxiety-depressive symptoms and work-related burnout and there is a lack of resources to attend them. The COVID-19 pandemic has worsened this problem, particularly affecting healthcare workers, and digital tools have been proposed as a workaround.
Objectives: We present the development, feasibility and effectiveness studies of chatbot (Vickybot) aimed at screening, monitoring, and reducing anxiety-depressive symptoms and work-related burnout in PC patients and healthcare workers.
Methods: User-centered development strategies were adopted. Main functions included self-assessments, psychological modules, and emergency alerts. (1) Simulation: HCs used Vickybot for 2 weeks to simulate different possible clinical situations and evaluated their experience. (3) Feasibility and effectiveness study: People consulting PC or healthcare workers with mental health problems were offered to use Vickybot for one month. Self-assessments for anxiety (GAD-7) and depression (PHQ-9) symptoms, and work-related burnout (based on the Maslach Burnout Inventory) were administered at baseline and every two weeks. Feasibility was determined based on the combination of both subjective and objective user-engagement Indicators (UEIs). Effectiveness was measured using paired t-tests as the change in self-assessment scores.
Results: (1) Simulation: 17 HCs (73% female; mean age=36.5±9.7) simulated different clinical situations. 98.8% of the expected modules were recommended according to each simulation. Suicidal alerts were correctly activated and received by the research team. (2) Feasibility and effectiveness study: 34 patients (15 from PC and 19 healthcare workers; 77% female; mean age=35.3±10.1) completed the first self-assessments, with 34 (100%) presenting anxiety symptoms, 32 (94%) depressive symptoms, and 22 (64.7%) work-related burnout. Nine (26.5%) patients completed the second self-assessments after 2-weeks of use. No significant differences were found for anxiety [$t(8) = 1.000$, $p = 0.347$] or depressive [$t(8) = 0.400$, $p = 0.700$] symptoms, but work-related burnout was significantly reduced [$t(8) = 2.874$, $p = 0.021$] between the means of the first and second self-assessments. Vickybot showed high subjective-UEIs, but low objective-UEIs (completion, adherence, compliance, and engagement).
Conclusions: The chatbot proved to be useful in screening the presence and severity of anxiety and depressive symptoms, in reducing work-related burnout, and in detecting suicidal risk. Subjective perceptions of use contrasted with low objective-use metrics. Our results are promising, but suggest the need to adapt

and enhance the smartphone-based solution in order to improve engagement. Consensus on how to report UEIs and validate digital solutions, especially for chatbots, are required.

Disclosure of Interest: None Declared

O0098

Virtual self-conversation to support people living with obesity when starting their change process towards a healthier lifestyle: Preliminary results of a longitudinal study

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doi: 10.1192/j.eurpsy.2023.302

Introduction: People living with obesity (PLWO) often experience ambivalence when starting their change process towards a healthier lifestyle. Psychological treatments for obesity should resolve this ambivalence and help PLWO to explore their own reasons for change in line with their needs and values, as well as promote self-efficacy. Following the Motivational Interviewing (MI) principles, the SOCRATES project proposes a "virtual self-conversation" to help PLWO to address some of the psychological aspects associated with obesity, such as the lack of awareness about their condition, the impact of the internalization of weight stigma, and the lack of self-efficacy.
Objectives: With the current longitudinal study, we aim to explore how the participants' process of lifestyle change, and how their eating habits and dysfunctional eating patterns change before and after the virtual intervention.
Methods: Forty-eight patients with obesity from the Vall d'Hebron University Hospital (Mean age = 19.7 years) were assigned to 3 groups. The Experimental Group 1 (EG1) (N = 21), after completing an intensive training on MI, received a virtual intervention using the "motivational self-conversation" technique. The Experimental Group 2 (EG2) (N = 17) underwent a virtual intervention with a pre-registered psychoeducational dialogue, and the Control Group (CG) (N = 10) followed treatment-as-usual. All participants completed self-reported questionnaires on their motivation to change lifestyle [(*Readiness Rulers (RR), Processes of Change questionnaire in weight management (P-W)*], eating habits (*Habits questionnaire*) and dysfunctional eating patterns (*Three Factor Eating Questionnaire-18*) at baseline (T0), post-intervention (T1), and 4 weeks follow-up (T2). Repeated measures ANOVA was performed for all the questionnaires.
Results: Statistically significant results were shown regarding motivation to change through the RR and the "evaluation of the consequences of their weight" subscale of P-W across time for the EG1 ($p < .05$). These results suggest that participants' motivation to eat healthier and do more exercise, as well as self-awareness about the negative consequences of their condition increased after the virtual intervention.
Conclusions: The present study showed that this novel virtual intervention might be an effective tool in helping PLWO resolve their ambivalence to change lifestyle and acquire self-awareness about their condition. However, the intervention did not lead to significant changes in other psychological variables, such as lifestyle habits or dysfunctional eating patterns; domains that may be less sensitive to changes over the time, and which may take place once motivation is well-established.

Disclosure of Interest: None Declared

O0099

Digital CBT-I versus stepped-care CBT-I to prevent depression one year later

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doi: 10.1192/j.eurpsy.2023.303

Introduction: Insomnia is a robust risk factor for depression. Treating insomnia with digital CBT-I (dCBT-I) has been shown to prevent future episodes of depression; however, remission rate of insomnia following dCBT-I is lower compared to face-to-face CBT-I (fCBT-I), which may reduce the effect on depression prevention. A stepped-care model can optimize care by starting with a least resource intensive intervention (step 1: dCBT-I) and stepping-up non-remitters to specialized treatment (step 2: face-to-face CBT-I).
Objectives: This study examined the efficacy of a stepped-care approach to prevent depression.
Methods: 1018 individuals with DSM-5 insomnia and no depression were randomized into two conditions at step 1: dCBT-I (n=613), or an online sleep education control (n=624). Participants in the dCBT-I condition who did not show remission for insomnia (ISI>9) were further randomized to either face-to-face CBT-I (n=103) or sleep education (n=104). Rates of clinically significant depression (moderate severity and above) was assessed at one-year follow-up.
Results: Insomnia remission rates were higher in the dCBT-I group (40%) compared to the control group (22%). Those who did not remit following step-1 dCBT-I showed step-2 insomnia remission rates of 75% following fCBT-I compared to 38% following the step 2 control.
At one year follow-up, the incident rate of clinically significant depression was 2.4 times higher in those who received control (13.2%) compared to fCBT-I (5.5%) at step 2. Depression rate was 10.1% in those who did not receive dCBT-I at step-1.
Conclusions: Preliminary evidence from this study provide supported that a stepped-care approach may produce greater protection against incident depression than dCBT-I alone.

Disclosure of Interest: None Declared