Strengthening Behavior and Social Functioning Among Persons with Autism Spectrum Conditions Using Artificial Intelligence and Behavioral Activation: Protocol for the Well-Being and Health for Loved onEs with ASD (WHOLE) Psychosocial Pilot Randomized Controlled Trial

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Abstract. Although a proportion of families and communities in low resource settings continue to provide care to loved ones with autism spectrum conditions, many of the affected persons remain undiagnosed and without access to proven therapies due to high treatment cost and cultural pressures, in particular. Use of conversational agents on mobile phones in combination with behavior activation home care may provide an innovative, culturally appropriate and affordable platform for strengthening behavior and social functioning outcomes, in addition to an opportunity for participation of the persons with autism spectrum conditions in the intervention development process. We aim to assess the effectiveness of an intervention that incorporates artificial intelligence conversational agent technologies and behavioral activation therapy techniques.

Keywords. Artificial Intelligence, Autism Spectrum Disorders, Conversational Agent, Chatbot, Psychosocial, Social functioning, Randomized Control Trial

1. Introduction

Autism Spectrum Disorders (ASD) are the fastest growing developmental disability [4, 5] that affects approx. 1% of the world population [2] and impacts behavioral and social functioning deficits such as social motivation, social anxiety, social cognition, and social skills [3].

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Autism policy and intervention research stakeholders advocate for psychosocial interventions that reduce core symptoms and improve adaptive skills; empower families and local communities; are applicable for low resource settings and actively incorporate persons with ASD in the research process and dissemination of findings [1], but interventions with such components remain underutilized. Therefore, this study aims to assess the feasibility of conducting a randomized control trial (RCT) evaluating the effectiveness of a behavior and social functioning intervention using artificial intelligence via a conversational agent or chatbot and behavioral activation with persons with Autism Spectrum Conditions.

2. Methods and Analysis

The Well-being and Health for Loved Ones with Autism Spectrum Conditions (WHOLE) intervention is a pilot, single-blinded, randomized controlled trial evaluated over 12 weeks, with 6 and 12-month follow-up periods to assess the feasibility, social and economic value of the intervention. Sixty youth/young persons will be recruited and randomized into intervention and control groups. Participants will be selected, in part, via the Emotional and Behavioral Screener instrument from the undiagnosed ASD population. Two separate pilot RCTs will be conducted in Saint Kitts & Nevis and Republic of China (Taiwan). Analysis of covariance (ANCOVA), descriptive statistics and social return on investment (SROI) analysis methods will be employed.

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