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Protocol for a process evaluation of a cluster randomised controlled trial to improve psychosocial treatment of patients with psychotic spectrum disorders: the IMPULSE trial

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DOI: 10.52095/gp.2020.1407

Received: 2020-11-20; Accepted: 2021-12-15

Abstract

Objective: This paper describes the protocol of a process evaluation of a cluster randomised controlled trial designed to evaluate the effectiveness, cost-effectiveness and implementation of a digital mental health intervention, called DIALOG+, in five low- and middle-income countries in Southeast Europe (Bosnia and Herzegovina, Kosovo¹, Montenegro, North Macedonia and Serbia). The objectives of the process evaluation are: a) to explore attributes of context that might impact on the implementation of the DIALOG+ intervention; b) to assess intervention fidelity and c) to explore patients' and clinicians' retrospective (i.e. experienced) acceptability of the intervention.

Materials and methods: This is a mixed-method process evaluation nested within the cluster randomised controlled trial. We adopted the guidance on process evaluations of complex interventions published by the United Kingdom Medical Research Council. Data collected during and after the trial, but prior to awareness of trial outcomes, include transcripts, questionnaire responses, routinely collected monitoring data and audio-recordings of intervention and control sessions. Data analysis is descriptive and involves triangulation methods to compare findings across countries, stakeholder groups (healthcare provider, patient) and data type (qualitative, quantitative).

Results: This work is part of a larger study entitled 'Implementation of an effective and cost-effective intervention for patients with psychotic disorders in low and middle-income countries in Southeast Europe' (IMPULSE). The study is funded by the European Union's Horizon 2020 research and innovation programme. The IMPULSE trial recruited 81 clinicians and 458 patients. The clinician clusters were randomised to the intervention (six sessions of DIALOG+ over 12 months) or treatment-as-usual arm. Process data collection began in parallel with the trial, starting in April 2019. Data collection and analysis will be completed before the main trial findings are known. Process evaluation findings will be used to interpret the trial results including assessing the effect of context on outcomes.

Conclusion: This process evaluation will explore the context, intervention fidelity and acceptability to contextualise the trial results, help in optimising sustainability of the intervention and inform its future dissemination. The methods described here may also inform the development and implementation of other complex psychosocial interventions in low-resource settings.

Keywords

Psychosis, Mental healthcare, Trial, Digital intervention, Process evaluation, Low- and middle-income countries

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INTRODUCTION

People with severe mental illness within the psychotic spectrum, such as schizophrenia, schizoaffective disorder and bipolar disorder, can experience a wide range of mental health symptoms. These may include hearing voices, delusional thinking, suspiciousness, withdrawal from family and friends and fluctuating or low mood (Sadock & Sadock, 2014). Stigma, discrimination and violation of human rights of people with psychotic spectrum disorders (PSDs) are common. Their life expectancy is 15–20 years shorter than that of the general population due to underdiagnosed physical illnesses, poor access to healthcare and suicide (Sadock & Sadock, 2014). PSDs typically last for decades and present a major health, social and economic burden for patients, families, caregivers and wider society. The global economic burden has been estimated to range from 0.02% to 1.65% of the gross domestic product (Chong et al., 2016).

People affected by PSDs are mainly treated in hospital-based settings. As treatment is largely focused on antipsychotic medication, patients' psychosocial needs and resources are frequently neglected. This can result in further social exclusion and inequality of health outcomes among this vulnerable group. Healthcare systems in high-income countries provide a combination of care, involving medication and psychosocial interventions, which helps people affected by PSDs to lead a productive life and integrate into society (NICE, 2014). However, low- and middle-income countries have neither the funding nor enough qualified staff to provide such specialised services (WHO, 2014). One way to accelerate improvements in healthcare for this patient group would be through the large-scale implementation of effective, low-cost and easily deliverable psychosocial interventions designed to make existing routine clinical meetings more therapeutically effective. This paper presents the protocol for the process evaluation of a hybrid effectiveness–implementation trial of one such intervention.

THE 'IMPLEMENTATION OF AN EFFECTIVE AND COST-EFFECTIVE INTERVENTION FOR PATIENTS WITH PSYCHOTIC DISORDERS IN LOW AND MIDDLE-INCOME COUNTRIES IN SOUTHEAST EUROPE' (IMPULSE) TRIAL

The trial in which this process evaluation is embedded is a multi-country, pragmatic, hybrid effectiveness–implementation, cluster randomised controlled clinical trial of a digital mental health intervention designed to improve clinical and social outcomes of people with PSDs. A detailed

study protocol of the IMPULSE trial has been published elsewhere (Jovanović et al., 2019).

The IMPULSE trial recruited 81 clinicians and 458 patients across five Southeast European countries: Bosnia and Herzegovina, Kosovo², Montenegro, North Macedonia and Serbia. The inclusion criteria for clinicians were: professional qualification in mental healthcare (e.g., psychiatrists, nurses and psychologists), over 6 months of work experience in mental healthcare and no plans to leave their post within the trial period of 12 months. The inclusion criteria for patients were: primary diagnosis of PDS in remission; over 18 years of age, attending the participating outpatient clinic or day hospital; history of at least one hospital admission in their lifetime; no plans to leave the participating mental healthcare services during the trial period of 12 months and capacity to provide informed consent. Patients were excluded if they had diagnosis of organic brain disorder or severe cognitive deficits. A cluster comprised a clinician working with up to eight patients with PSD. After completion of patients' baseline assessments, clinicians were randomly assigned to either the intervention or control arm, with an allocation ratio of 1:1. The intervention consisted of six DIALOG+ sessions delivered over 12 months, during face-to-face routine clinical meetings. Clinicians in the control arm provide treatment as usual (TAU), including medical reviews focused on medication and risk assessment. The primary outcome measure is subjective quality of life and the secondary outcomes are mental health symptoms, social functioning, satisfaction with services and intervention costs at 12 months after randomisation. Figure 1 shows the key process and the clinical and implementation outcomes in the IMPULSE trial.

DESCRIPTION OF THE INTERVENTION

DIALOG+ is a complex digital mental health intervention based on patient-centred communication (Pinto et al., 2012) and solution-focused therapy (Priebe et al., 2014). DIALOG+ was designed to make the routine meetings between clinicians and patients therapeutically more effective. The intervention is available as an app and makes use of a tablet computer within routine clinical meetings. Each DIALOG+ session begins with patients' self-assessment of their satisfaction with eight life areas (mental health, physical health, job situation, accommodation, leisure activities, friendships, relationship with family/partner and personal safety) and three treatment areas (medication, practical help and meetings with professionals). Satisfaction with each area is rated on a 1-point (totally dissatisfied) to

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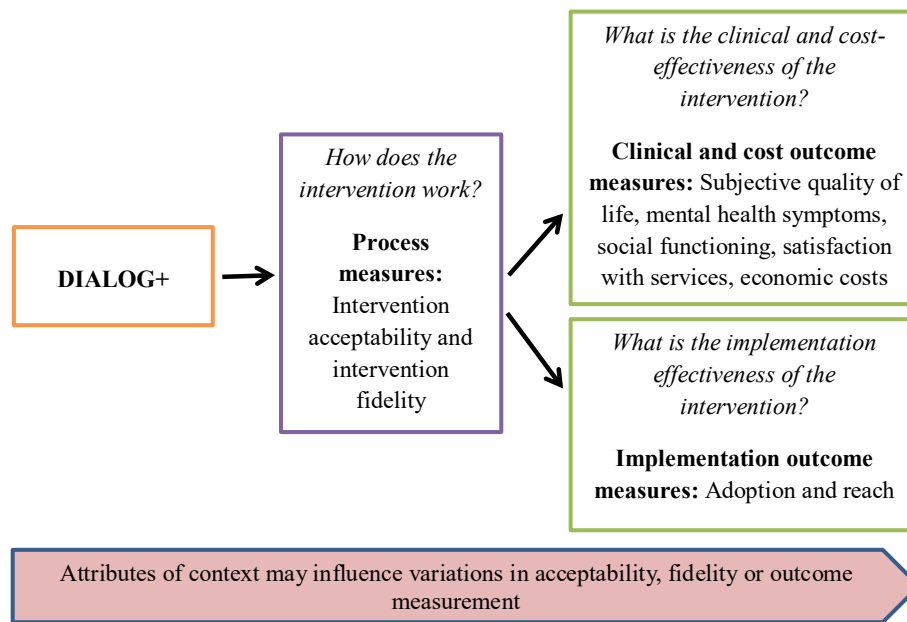


Figure 1. Process and outcome measures of the IMPULSE trial. Adapted from Global Alliance of Chronic Diseases Implementation Science Workshop – GACD ISW 2019 (Irazola, 2019).

7-point (totally satisfied) scale. After they review the ratings, patients are invited to choose an area they wish to discuss further during the meeting. A four-step, solution-focused approach (Understanding, Looking Forward, Exploring Options, Agreeing on Actions) is used as a discussion guide with the goal of recognising and applying the patient's existing resources. The session concludes with the patient and the clinician agreeing on actions that the patient, clinician and/or another person from the patient's life should accomplish before the next meeting in order to improve the patient's life and treatment satisfaction (Priebe et al., 2017).

In the UK, DIALOG+ has been shown to be effective in patients with long-term psychosis who live in the community (Priebe et al., 2015). It led to reduced clinical symptoms, better quality of life and lower treatment costs. DIALOG+ uses already existing clinical relationships and does not require establishment of new services or referral to other clinicians, so the intervention is well suited for healthcare systems with limited resources. With only minimal training, which consists of an initial session of 3 hours, followed by a top-up session of 1–2 hours, a range of clinical staff (e.g. social workers, nurses, psychologists and psychiatrists) were able to successfully implement the intervention in routine practice (Priebe et al., 2015; Fichtenbauer et al., 2019). As a cost-saving intervention that does not rely on a specific professional group, it allows for affordable and effective management of PSDs. DIALOG+ provides a comprehensive screening of

mental, physical and social problems and leads to action plans in all these areas, thus avoiding inefficient fragmentation of care planning. It is proposed that the intervention works through four mechanisms: a comprehensive structure, self-reflection, therapeutic self-expression and empowerment (Omer et al., 2016).

The Supplementary file contains the Template for Intervention Description and Replication (TIDieR) Checklist (Hoffmann et al., 2014).

Figure 2 presents the logic 'inputs–activities–outputs–outcomes–impact' model (Kellogg, 2004) that guided the implementation of DIALOG+ for the IMPULSE trial.

AIMS AND OBJECTIVES

Process evaluations are useful to elucidate differences between expected and observed trial results, to explain the role of context and to generate an understanding of implementation (Moore et al., 2015). They are an essential part of randomised controlled trials of complex mental health interventions because they can provide evidence for how complex interventions and associated trial outcomes may be replicated in specific contexts (Moore et al., 2015). Process evaluations (especially investigations of intervention fidelity) are particularly important in multisite, pragmatic trials such as the IMPULSE trial, where there is likely

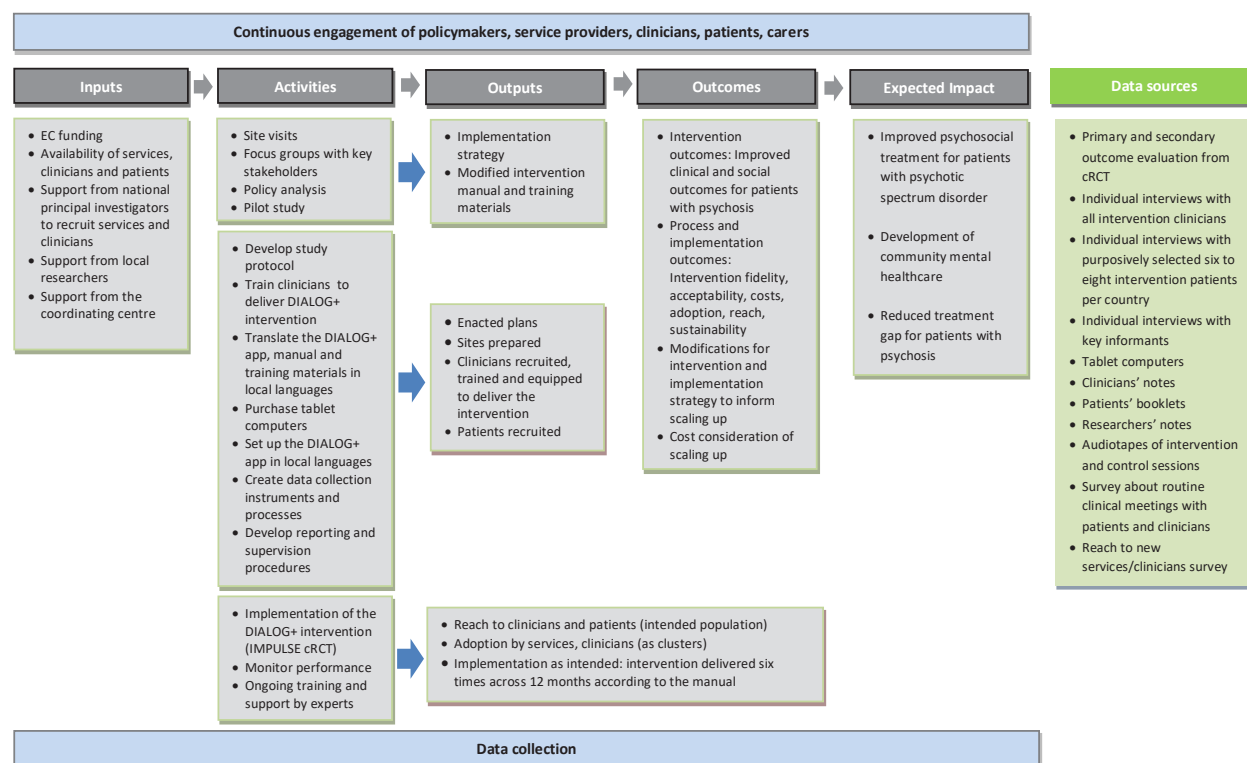


Figure 2. Logic model of DIALOG+ implementation in the IMPULSE trial. cRCT = cluster randomised controlled trial.

to be variation in the way the 'same' intervention is delivered and received (Oakley et al., 2006).

Thus, the overall aim of the process evaluation of the IMPULSE trial is to contextualise and explain the trial effectiveness and cost-effectiveness results with respect to why the intervention may or may not have been effective and what might be required for it to be sustained and widely implemented in clinical settings in the participating countries.

The study objectives are: a) to explore attributes of context that might impact on the implementation of the DIALOG+ intervention; b) to assess intervention fidelity and c) to explore patients' and clinicians' retrospective (i.e. experienced) acceptability of the intervention.

MATERIALS AND METHODS

This is a mixed-method process evaluation of an implementation–effectiveness cluster randomised controlled trial of DIALOG+ in outpatients with PSDs in five Southeast European countries (Bosnia and Herzegovina, Kosovo³, North

Macedonia, Montenegro and Serbia). The design of this process evaluation was guided by the UK Medical Research Council's guidance for process evaluation of complex interventions to explore the role of context, the fidelity of the intervention and its mechanisms of impact (Moore et al., 2015).

Multiple methods are used to collect process data, including questionnaire surveys, semi-structured interviews and focus groups. The data collection is carried out both during and after intervention delivery and prior to the research team's awareness of trial outcomes. At the moment of writing, all patient assessments as part of the trial have been completed and the data collection for the end-of-trial semi-structured interviews/focus groups with clinicians and semi-structured interviews with patients is ongoing. Findings of the process evaluation will be integrated with those of the trial, and thus will be interpreted after the main trial results are known.

Data collection and analysis are described separately for each of the three study objectives.

Objective 1: To explore attributes of context that might impact on the implementation of the DIALOG+ intervention

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Context is defined as a combination of features that exist separately from the actual intervention and can have an impact on the implementation process (Squires et al., 2019). Consideration of interactions between the intervention and its context is an integral part of a process evaluation (Moore et al., 2015). Squires et al. (2019) identified and described 14 broad attributes of context: resource access, work structure, patient characteristics, professional role, organisational culture, facility characteristics, system features, healthcare professional characteristics, financial, collaboration, leadership, evaluation, regulatory or legislative standards, and societal influences. Using these attributes of context as a framework for analysis will enable us to assess the role of context in the implementation of DIALOG+ and identify which contextual attributes may have acted as implementation barriers and/or facilitators.

Data collection: To broaden our knowledge on the context in which the implementation of the DIALOG+ intervention was planned, both quantitative and qualitative data were collected prior to the start of the IMPULSE trial. Quantitative data included information about the participating mental healthcare services, while qualitative data encompassed mental health policy documents and data obtained through focus groups and semi-structured interviews with key groups of stakeholders (e.g. patients, carers, clinicians, service providers, policymakers).

Data analysis: Findings from site visits, pre-trial mental health policy analysis and pre-trial focus groups and interviews with key groups of stakeholders will be integrated and coded onto a pre-determined coding framework based on the attributes of context as described by Squires et al. (2019), in order to define the role of context in the implementation of DIALOG+ within the IMPULSE trial. The qualitative and quantitative data sets have already been analysed separately. The triangulation of findings from different methods will follow the approach described in a triangulation protocol (Farmer et al., 2006), which is proposed to be suitable for mixed-methods research (O’Cathain et al., 2010). A ‘convergence coding matrix’ presenting the different findings will be developed to assess the agreement, partial agreement, silence or dissonance between the findings (Farmer et al., 2006) with respect to the attributes of context described by Squires et al. (2019).

Objective 2: To assess intervention fidelity

Intervention fidelity refers to the degree to which an intervention is delivered, received and enacted in accordance with the intervention protocol (Bellg et al., 2004). It is proposed that, unless all three steps are completed as specified

in the intervention manual, the intervention is unlikely to be effective. Furthermore, the first step in ensuring that any new intervention is delivered in line with the intervention manual is to conduct appropriate training for intervention providers. Therefore, intervention fidelity focuses on the training of clinicians, delivery of intervention, receipt of intervention and enactment of plans agreed during intervention delivery. Another key aspect of fidelity is intervention differentiation, defined as the degree to which the active intervention differs from the control condition (Carroll et al., 2007).

Data collection

- *Training:* Clinicians randomly allocated to the intervention arm attended several DIALOG+ training sessions prior to the start of intervention delivery. Standardised and pre-tested training materials were used to minimise the effect of potential differences in intervention delivery between clinicians from different countries. After the training sessions, data on the number and duration of attended training sessions were collected from the research assistants who conducted the training. We will use reports from trainers to assess whether activities related to preparation and training for intervention delivery were completed. In addition, we asked clinicians to report whether they found the training materials clear and useful.
- *Delivery:* Multiple qualitative and quantitative methods will be employed to assess intervention delivery. After each scheduled DIALOG+/TAU session, all participating clinicians were asked to report on DIALOG+/TAU sessions’ occurrence and duration. Clinicians delivering DIALOG+ were also asked to report which life areas were discussed in the four-step approach and what actions were agreed at the end of the session. In addition, clinicians were asked whether they experienced any problems delivering the intervention and how the problems or obstacles were resolved. This will enable us to document any adaptations to the intervention as delivered. To assess whether clinicians in the intervention arm adhered to the intervention manual, one DIALOG+ session per clinician has been audiotaped.
- *Receipt:* Receipt of treatment data includes information on whether the patients were able to understand and perform intervention-related behavioural skills during the intervention sessions. These data, along with data on participants’ responsiveness such as engagement, perceived usefulness and acceptance, will be obtained from audiotaped DIALOG+ sessions, end-of-trial semi-structured interviews and focus groups with clinicians, and semi-structured interviews with patients in the intervention arm.

- **Enactment:** Enactment refers to the extent to which patients enacted particular behavioural skills or adopted certain cognitive strategies during the intervention delivery in their daily life (Bellg et al., 2004). By analysing audiotaped DIALOG+ sessions, we will be able to identify patients' reports of whether they attempted or managed to accomplish the actions that they planned during the previous DIALOG+ session and if so, how they accomplished them.
- **Differentiation:** To assess differences between the DIALOG+ intervention and the control treatment (TAU), a survey methodology has been employed. Data on the format and content of intervention and TAU sessions have been gathered from all participating clinicians and patients. In addition to this, at least one session per clinician in the control arm has been audiotaped to provide information on the actual duration of the TAU sessions and their content. By comparing these audiotapes with those of the DIALOG+ sessions, we will be able to identify whether, and to what extent, the content of the sessions overlaps with the key elements of the intervention.

Data analysis: Descriptive statistics will be used to report on intervention training, the fidelity of the DIALOG+ intervention as delivered, received and enacted, and elements of TAU sessions as delivered. Focus groups and semi-structured individual interviews will be audio-recorded, transcribed verbatim, anonymised and analysed. Transcripts will be analysed using framework analysis (Ritchie & Spencer, 1994; Krueger & Casey, 2000; Rabiee, 2004). Analysis methods for the end-of-trial semi-structured interviews and focus groups are further detailed under the third study objective below.

Structured analysis of audiotaped intervention sessions will be used to assess clinicians' adherence to the DIALOG+ manual. We will utilise the DIALOG+ Adherence Scale, developed by DIALOG+ experts at the Unit for Social and Community Psychiatry at Queen Mary University of London, whose items assess clinician behaviours specific to delivery of the DIALOG+ procedure (e.g. selection of areas for further discussion, the four-step approach) as specified in the DIALOG+ manual. A DIALOG+ Adherence Scale score will be computed following the methodology described by Priebe et al. (2017). A mean score (min, max) for each of the items on the DIALOG+ Adherence Scale, as well as for each subscale and for the total score, will be calculated across the sample. High-scoring items (mean score ≥ 0.90) and low-scoring items (mean score ≤ 0.25) will be identified for each subscale. The number of clinicians who delivered each of the items will also be reported. In cases where more than one recording was collected per clinician, each recording will be rated and an average score will be

calculated. Audiotaped control sessions will also be assessed against the DIALOG+ Adherence Scale to evaluate intervention differentiation.

The content of DIALOG+ sessions will be analysed following the methodology described by Omer et al. (2016). Descriptive quantitative analysis will be used to describe the selection frequency of each life and treatment domain from the DIALOG+ satisfaction scale and the frequency of actions agreed during the sessions. Using content analysis (Hsieh & Shannon, 2005), action item data will be coded based on two pre-determined themes: a) person to whom the action is assigned and b) the type of action.

Content analysis (Hsieh & Shannon, 2005) will be used to analyse qualitative data from clinicians' responses about how they overcame any obstacles with delivering the intervention.

Objective 3: To explore patients' and clinicians' retrospective (i.e. experienced acceptability of the intervention)

Acceptability is defined by Sekhon et al. (2017) as 'multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention'. Following this definition, Sekhon et al. (2017) developed a theoretical framework of acceptability (TFA) consisting of seven constructs: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs and self-efficacy, in order to inform a more robust evaluation of acceptability of interventions. The TFA is suitable for assessing both anticipated (i.e. prospective) and experienced (i.e. retrospective) accessibility from the views of intervention adopters (Sekhon et al., 2017). Evaluating the acceptability of an intervention is important because it is a predictor of the success of implementation of the intervention (Diepeveen et al., 2013; Stok et al., 2016), which, in turn, can influence the overall effectiveness of the intervention (Borrelli et al., 2005; Proctor et al., 2009).

Data collection: We will explore the experienced acceptability (post-intervention delivery) by conducting semi-structured interviews or focus groups with all clinicians and semi-structured interviews with 40–50 purposively selected patients from the intervention arm who consented to participate in a qualitative study after the end of the trial. Purposive sampling will be employed to capture views by a diverse group of patients based on the following characteristics: age, gender, diagnosis, level of engagement with DIALOG+ and trial cluster. Patients' characteristics regarding their diagnosis, age,

country, attendance to intervention sessions and associated trial clinician, as well as clinicians' characteristics such as gender, age, country, profession and years of clinical experience will be collected. Furthermore, the date, duration and mode of conducting the interview/focus group will be collected. Intensive training in qualitative research was provided to ensure a consistent approach across the research team. Interviews and focus groups with patients and clinicians began after completion of outcome assessment and final interventions session, respectively. Data collection began in April 2020 and is ongoing at the time of submission of this paper. Due to restrictions related to COVID-19 pandemic, our initial plan to conduct face-to-face focus groups and interviews with clinicians and patients, respectively, was changed to remote data collection by means of semi-structured phone/video conference interviews. Researchers are conducting face-to-face focus groups with clinicians where restrictions have been (partially) lifted.

The topic guide for focus groups with clinicians was developed to explore a) experience of intervention delivery; b) perceived usefulness/effectiveness of DIALOG+; c) views on collaborative working between patients and clinicians (novelty of the intervention) and d) views on sustainability of the intervention and how it could be scaled up in clinical settings if shown to be effective. The topic guide for interviews with patients was developed to explore participants' a) experiences of engaging with the DIALOG+ intervention; b) perceived impact of DIALOG+ on their life; c) views on collaborative working between clinicians and patients; d) views on sustainability of the intervention and how it could be scaled up in clinical settings if shown to be effective and e) suggested improvements to the intervention. The topic guide questions specifically focus on clinicians' and patients' views about the key distinctive elements of the intervention, such as setting actions at the end of each DIALOG+ session and collaborative working. The topic guides were developed in English by a multidisciplinary, multilingual team using an iterative process which included circulating draft versions among all team members and patient representatives. Discussions were held among researchers from the different countries to ensure a shared understanding of the topic guide items. The final versions of the topic guides were then translated into the national Southeast European languages by prioritising translation of the meaning of the topic guide items rather than word-for-word translations, in order to make the questions contextually appropriate using everyday language.

The end-of-trial qualitative study will enable us to explore participants' experienced acceptability of the intervention

and in turn will help to explain the overall effectiveness of the intervention. Data collection is likely to highlight challenges in the implementation across the different contexts as well as patients' and clinicians' views of the way DIALOG+ works in practice. It is also likely to generate further hypotheses (in addition to those proposed by Omer et al., 2016) about the mechanisms of action of DIALOG+.

Data analysis: Descriptive statistics will be used to report participant characteristics. Qualitative data analysis coordinating teams will be formed, consisting of one representative from each country's research team and one from the team in the UK in order to establish equal partnership among all the participating countries. Focus groups and semi-structured one-to-one interviews will be audio-recorded, transcribed verbatim, anonymised and analysed. Data will be coded into a pre-determined coding framework based on the constructs of the TFA (Sekhon et al., 2017). The transcripts will be analysed using framework analysis (Ritchie & Spencer, 1994; Krueger & Casey, 2000; Rabiee, 2004), using the following steps:

- Researchers will familiarise themselves with the translated transcripts through listening to interviews and focus groups, reading and coding transcripts and discussions in data analysis coordination meetings.
 - 20% of all interview/focus group transcripts from each participant group will be translated into English, so that researchers from all countries can actively collaborate. The translations will be conducted by the researchers who facilitated the interviews or by professional translators in which case the researchers will double-check the translations for accuracy. Meaning-based translations were prioritised, as opposed to word-for-word translations because not every word or expression is universal and translatable. The majority of transcripts will remain in their original languages to reduce the possibility of mistranslation and loss of shades of meaning.
- Developing a coding framework through which our data could be organised.
 - A framework will be developed in English, incorporating the TFA constructs (Sekhon et al., 2017).
- Indexing the data through systematically coding each 'chunk' of text from the transcripts to one (or more) of the categories in the framework.
 - Each Southeast European team will conduct this step using transcripts in local languages.
- Charting the data which involves summarising the data in each category for each participant into a table. The summary of the data will be in English. Variability in participants' accounts associated with their individual characteristics, as

specified in the data collection procedures, will be captured by charting.

- Mapping and interpretation
 - Only key quotes, determined by the relevant Southeast European teams, representing the themes identified, will be translated into English and used to report the findings. We will report any differences in patterns of data and will explore possible associations with differences in attributes of context.

RQDA software (Huang, 2016) will be used to facilitate this process. As part of 'thematic' approaches, framework analysis allows for flexibility and structure to management and analysis of data. This fits with the current study due to the already determined research aims, large sample size and large research team from six different countries. Additionally, framework analysis allows for *a priori* issues and emergent data-driven ones to direct the development of the analytic framework, by developing an initial framework that is more focused on researchers' *a priori* concerns or research questions, which is then piloted on the transcripts to refine the *a priori* categories to also best fit the data (Parkinson et al., 2015). This will allow us to explore emerging changes in implementation and unanticipated or complex causal pathways.

The final stage of the process evaluation analysis will be to bring together the findings from the broader quantitative and qualitative methods to generate hypotheses about why the intervention did (or did not) work in all or some contexts and about the intervention's mechanisms of action, as well as to identify implications for longer term implementation if appropriate.

DISCUSSION

This paper describes the rationale and methods for the planned mixed-methods process evaluation of the IMPULSE trial. This process evaluation builds on findings from the process evaluation of the DIALOG+ trial in the UK (Omer et al., 2016) that focused on suggesting the mechanisms of DIALOG+. We will conduct a comprehensive exploration of the contextual factors that may have impacted the intervention's effectiveness, and of the fidelity and acceptability of the intervention in a range of healthcare settings. The differences between these settings and the UK are potentially important; we will systematically investigate context as a potential effect modifier. This research may also contribute to further understanding of the value of process evaluations in the context of clinical trials in mental healthcare.

The process evaluation of the IMPULSE trial will provide an insight into the trial's validity. Figure 3 illustrates the proposed explanatory pathway for the process evaluation of the IMPULSE trial. Firstly, this process evaluation will yield evidence about multiple component constructs of intervention acceptability of clinicians and patients who participated in the intervention arm of the trial. Secondly, it will provide a greater understanding of intervention fidelity during the trial. If clinicians perceived the intervention as highly acceptable, then it is likely that they delivered the intervention according to the manual. Similarly, if patients' experienced intervention acceptability is found to be high, we can expect that they were more likely to engage with and enact the intervention as intended. Additionally, the findings of the process evaluation may show differences between the DIALOG+ intervention and TAU. Hence, exploring fidelity will show if the trial result reflects a valid evaluation of the DIALOG+ intervention as designed. Importantly, different attributes of the context in which DIALOG+ was implemented during the IMPULSE trial will be considered as part of the process evaluation because of the possible impact on variations in intervention acceptability, fidelity and outcome measurement. Therefore, the findings from this process evaluation will be used to explain the effectiveness or ineffectiveness of DIALOG+ and how attributes of context could modify the effects of the intervention.

The study has several strengths and limitations. The adoption of a mixed-methods approach and triangulation of data sources (healthcare provider, patient) and data type (qualitative, quantitative) can be considered as a key strength. Integration of the different data sources enhances the knowledge that this study can yield by achieving a 'whole greater than the sum of the parts' (O'Cathain et al., 2010). The qualitative and quantitative methods will assess different aspects of the overall research question and bringing them together will generate a more thorough understanding of how the DIALOG+ intervention works and the factors that may modify its effects. Process evaluation data will be analysed prior to awareness of the trial outcomes, which minimises interpretation bias. A limitation is that participants in the semi-structured interviews will only be a subset of all trial participants. Whilst we will ensure that participants with different characteristics are included, there is a risk of selection bias and possibly, we will not be able to interview enough participants who withdrew from the trial. Additionally, not all clinicians and patients from the trial consented for at least one of their intervention/control sessions to be audiotaped, which poses a risk of sampling bias.

We will perform exploratory analysis of differences and similarities between countries included in the trial hoping that

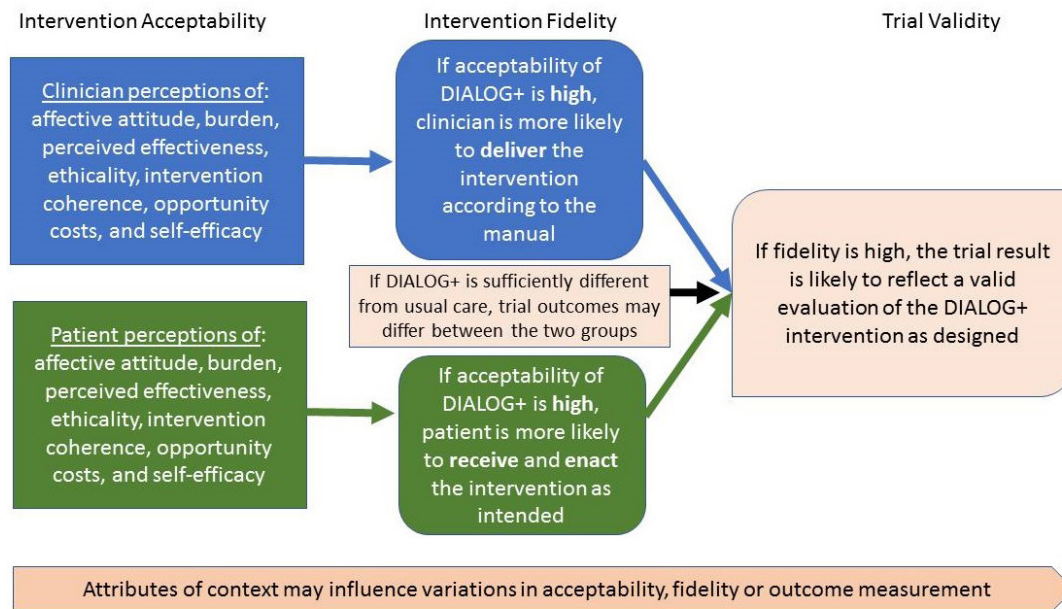


Figure 3. Proposed explanatory pathway for the process evaluation of the IMPULSE trial

this work could provide additional insights into the studied topics and possibly generate hypotheses for future studies. We will propose how further monitoring and research could be used to enable healthcare systems in these countries to track sustainability of the use of DIALOG+ over time and the potential long-term effects on patients and the mental healthcare workforce. Findings will be disseminated via a final report, peer-reviewed publications and practical guidance for healthcare professionals, commissioners and policymakers.

DECLARATIONS

Ethical Approval

All procedures described in this protocol are in accordance with the ethical standards of the institutional and/or national research committee and with the 1975 Helsinki declaration and its later amendments or comparable ethical standards. All procedures were approved by the following ethics committees (in alphabetical order): Bosnia and Herzegovina (Klinicki Centar Univerziteta u Sarajevu – Eticki Komitet 03-02-4216, Eticki komitet JU Psihijatrijska bolnica Kantona Sarajevo & JU Zavod za bolesti ovisnosti Kantona Sarajevo 02.8 – 408/19), Kosovo⁴ (Hospital and University Clinical Service of Kosovo – Ethics Committee 2019-85), Montenegro (Javna Zdravstvena Ustanova Klinicki Centar Crne Gore – Eticki komitet 03/01

– 29304/1, ZU Specijalna Bolnica za Psihijatriju ‘Dobrota’ Kotor – Eticki komitet, Eticki Komitet JZU Dom Zdravlja ‘DR Nika Labovic’ Berane 01-47), Republic of North Macedonia (Eticka Komisija za istrazivanje na luge, Medicinski Fakultet pri UKIM vo Skopje 03-24219), Serbia (Eticka komisija Medicinskog fakulteta u Beogradu 2650/XII-20 and Eticka komisija Specijalne bolnice ‘Dr Slavoljub Bakalovic’ Vrsac 01-36/1) and the United Kingdom (Queen Mary University of London QMREC2204a, 16 October 2018).

Funding

This study received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 779334. All authors received funding support through this grant for their effort related to this study.

Informed consent

The information about informed consent is taken from the IMPULSE trial protocol (Jovanović et al., 2019). All study participants were asked to sign an informed consent form prior to their participation in the study. The patients who agreed to be involved in the study met with researchers who checked if patients met the eligibility criteria and invited them to sign a consent form. Researchers explained the study to the patient and provided all relevant information, including the risks, benefits and confidentiality. Once a patient signed the informed consent,

⁴ By United Nations resolution.

researchers proceeded to complete the baseline assessment. Participating patients received their routine treatment from the mental healthcare systems in their area and/or according to their local health insurance arrangements. In the unexpected event that any patient appeared highly stressed or upset, the researchers were instructed to terminate the research activity and contact a clinician.

Study registration

The IMPULSE trial was registered with ISRCTN on 29/03/19 (ISRCTN11913964).

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