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Evaluation on the effectiveness on the implementation of WHO caregiver skills training (CST) programme in Hong Kong: a randomised controlled trial protocol

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ABSTRACT

Introduction This protocol delineates the research design and analytical framework used to evaluate the effectiveness of the WHO-CST (CST, caregiver skills training) in Hong Kong. The WHO-CST aims to enhance the caregiver skills of parents of children with potential autism spectrum disorders (ASD) and/or developmental delays.
Methods and analysis In this study, 130 eligible caregiver–child dyads were recruited and randomly assigned to the experimental and wait-list-control groups. A randomised controlled trial design was adopted to compare the changes between the two groups regarding caregivers' skills, knowledge and practices when interacting with their children with impairments due to ASD. Assessments were conducted before, immediately after and 1 month after the completion of the WHO-CST programme. The primary measurement tool was the joint engagement rating inventory developed by WHO experts to gauge how parents engage their children. A 10-min video recording of their dyadic interaction and behaviours in a defined play setting was used for the measurement. A set of other measurements of caregivers' knowledge, confidence and experience of using the caregiving skills were also measured.
Ethics and dissemination Ethics approval was received from the Human Research Ethics Committee (EA1901033), The University of Hong Kong. The final findings of this study will be disseminated through public reports, peer-reviewed publication or at a conference launched for the WHO-CST programme.
Trial registration number ChiCTR2000034585.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The WHO-CST (CST, caregiver skills training) is a programme that has been piloted in over 30 cities, mainly in low-income and middle-income countries; this study evaluates the effectiveness of the programme through a randomised controlled trial design in a high-income and developed Chinese community (Hong Kong).
⇒ To enhance the objectivity of the primary outcome measure, this study uses the ratings of specially trained assessors of changes in interactions between caregivers and their children.
⇒ Under the influence of COVID-19, the programme was delivered through a cloud-based peer-to-peer software platform, while the home visits were conducted in a university setting instead due to the public health concerns.
⇒ Participation and attrition rates may be impacted due to the change in delivery mode of the WHO-CST in Hong Kong.

INTRODUCTION

The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5) defines autism spectrum disorder (ASD) as a condition of persistent deficits in social communication and social interaction across multiple contexts, including Asperger syndrome, pervasive developmental disorder not otherwise specified and other similar conditions.[1] In 2016, the Autism and Developmental Disabilities Monitoring Network (ADDM) estimated the prevalence of ASD among children aged 8 years was 18.5 per 1000 children in 11 selected states in the USA, while other recent reports from the ADDM network state that in the USA, the 4-year-old ASD prevalence and the 8-year-old ASD prevalence are 13.4 per 1000[2] and 16.8 per 1000, respectively.[3] These figures have doubled when compared with those reported in 10 years ago (ie, 6.7 per 1000).[3] A recent meta-analysis found that the pooled estimate of ASD prevalence was 0.36% in nine selected Asian countries,[3] which is significantly higher than in a similar analysis conducted in 2010 (0.15%).[1] The pooled estimate of ASD prevalence in mainland China was about 0.39% in a meta-analysis conducted in 2018.[4]

Taking care of children with ASD symptoms can be challenging, especially when they may exhibit one or more of the core and severe

symptoms.[5] Many children with ASD are also found to have intellectual disabilities (IQ≤70),[6] or behavioural problems, such as non-compliance, aggression and self-injury,[7] and limited capacities to acquire daily living skills. Hence, many parents have parenting issues that severely impact family functioning and psychological well-being.[8] Taking care of children with ASD may also reduce opportunities for socialisation with others and have a negative impact on relationships with spouses or partners.[9 10]

Children with ASD in Hong Kong

According to the Education Bureau, the number of students with an ASD diagnosis in mainstream public schools rose from 2050 in 2010 to 8710 in 2018.[11] Furthermore, 24% of 22980 primary school students with special education needs were diagnosed as having ASD in 2018.[12] With reference to the latest figures from the Hospital Authority, the caseload of Child and Adolescent Psychiatric Services under the Hospital Authority for ASD alone increased from around 5000 in 2011/2012 to about 9000 in 2015/2016, comprising over 60% of the caseload of the services.[13] The number of children newly diagnosed with ASD in the Child Assessment Service of the Department of Health has increased close to three times from 755 in 2006 to 2021 in 2015, while the number of preschoolers with significant developmental disorders has doubled.[14] The abovementioned evidence demonstrates that the figures for children diagnosed as having ASD in Hong Kong have increased rapidly in the last two decades.

Parents of children with ASD living in Chinese society may face additional social stigma since traditional Chinese culture emphasises the association of parents' competence with children's academic achievement and behaviour.[15] Parents tend to internalise such external criticism of their children as affiliate stigma and assume their own responsibility for the stigmatic condition. They believe that they may be unable to control their children's condition and corresponding stigmatisation. Such affiliate stigma brings psychological and parenting stress to the parents, and consequently damages their mental health and psychological well-being,[16 17] delays formal diagnosis due to denial of children's ASD symptoms and sometimes hinders their children's involvement in community participation.[18 19]

The cost of accessing services for children with ASD symptoms through the private health system can be high for the lower class in Hong Kong if they want early diagnosis and treatment for their children.[15 20] The Hong Kong government provides free to low cost public services such as early diagnosis and medical treatment through Child Assessment Centres and non-governmental organisation (NGO) services at district levels for children under 12 years of age, but they are not sufficient to fulfil the overwhelming demands and as a result, there is a rather long waiting period (from 12 to 24 months) for initial developmental assessment.[21 22] The delay in diagnosis can have ramifications for children's school enrolment and delay necessary treatment and services.[21] Self-stigma, anxiety

and hesitation in seeking formal diagnosis and services may also contribute to parent's lack of awareness and knowledge of ASD and developmental delay. Although Hong Kong has a relatively advanced and well-organised public health system compared with other less developed cities, parents may not have sufficient knowledge and information about accessing clinical professionals and services in their residential districts.[23]

When parents who suspect that their children may have ASD are waiting to receive a formal diagnosis, preassessment intervention can be offered to enhance their caregiving skills and knowledge of early intervention. Services or interventions that allow parents to communicate with professionals and other parents with similar caregiving experiences can also moderate their anxiety since social support and teaching parents to have a positive outlook can mitigate mental and relational well-being issues.[16 24] Offering adequate and relevant information in the preassessment period can reduce the total duration of the assessment process.[25] A recent review of services prepared for children with ASD also suggests that provision of preassessment information packages, seminars and earlier interventions can reduce parents' anxiety and ensure they are better prepared for formal diagnosis and services.[23]

Furthermore, there is growing evidence that enhancement of parental skills in communication, engagement and mitigation of autistic mannerisms can be achieved through appropriate intervention, which can lead to better developmental and behavioural outcomes for ASD children and also improve family functioning.[26 27] Involving parents in implementing interventions for their children allows consistent handling and ensures that the intervention is appropriate in enhancing a child's earliest social and communicative development in their daily living environment.[10]

The WHO-CST programme

In 2009, WHO launched the mental health Gap Action Programme (mhGAP). The programme aims to bridge the treatment gaps for mental, neurological and substance use disorders worldwide. Developmental delays/disorders in young children are identified as a public health priority.[28] In the latest mhGAP intervention guide, WHO and Autism Speaks cocreated and recommended that the Caregiver Skills Training (CST) programme should be widely implemented for the management of children with possible ASD symptoms, intellectual disabilities and pervasive developmental disorders, especially in low-income and middle-income countries.[29] Development of the WHO-CST materials was based on the findings of several meta-analyses[26 27 30] and in consultation with experts and parents' associations from all WHO regions and support from Autism Speaks.[27] The aim of the WHO-CST programme is, on the one hand, to train non-specialist social service providers such as social workers, and on the other hand, to provide caregivers whose children have ASD symptoms with a certain level

of daily communication and caregiving skills to take care of their children, and self-caring skills to maintain their own psychological well-being.

The WHO-CST programme is a multicomponent intervention in which the content is theoretically based on behavioural approaches promoting shared engagement and communication, such as the Joint Attention Symbolic Play Engagement Regulation, Pivotal Response Treatment and Discrete Trial Training, as well as positive parenting approaches for promoting positive child behaviour and/or managing challenging behaviour.[27] It consists of nine group sessions and three individual home visits and focuses on training parents to use every day play and home activities and routines as opportunities for learning and development. The programme adopts a task-sharing approach in which non-specialists, such as social workers, teachers and community leaders, can train parents to deliver interventions for promoting their child's development effectively. A transdiagnostic approach is also utilised so that children who have not met the diagnostic criteria for ASD or other pervasive developmental disorders (such as developmental delays) can benefit from the programme. Under the framework of implementation science, the WHO-CST programme was in the stage of pilot-testing in more than 30 countries in 2018[31] and several randomised controlled trials were underway in some countries.[32]

In the actual implementation, the WHO-CST programme consists of 12 sessions that includes 9 weekly group-based sessions (each session approximately 2.5–3 hours' duration) on themes such as how to engage children using play and home routines, promoting children's communication skills and minimising challenging behaviours. Each group of 6–8 caregivers is led by two facilitators who have received a 5-day training workshop and year-long supervision conducted by WHO and Autism Speaks. In addition, three home visits (each visit lasts approximately 1–1.5 hours) take place: before the first session, between sessions 4 and 5 and after the last session. These are conducted by two facilitators.

The group-based sessions deliver CST materials and focus on training caregivers to improve communication skills, behavioural skills and problem-solving ability in caring for a child with potential ASD and/or developmental delays and engaging in activities and routines with caregiver–child dyads. Each group session consists of key activities including an abdominal breathing exercise, group discussion and experience sharing, skills demonstration by facilitators, live practice among caregivers in pairs and establishing plans for home practice and session review. Home visits provide an opportunity to build rapport with the family, learn about each child's developmental competencies and behaviour and the home family environment, help the caregivers to set goals for the programme, successfully implement the strategies that have been introduced during the group sessions, troubleshoot challenges that have been encountered by caregivers and identify any additional needs.

The JC A-Connect Family Support Team (hereinafter, the Team) was set up in August 2015 to examine the needs and the availability of services provided by NGOs for parents of children with ASD in Hong Kong. At the beginning of 2019, the Team began to adapt and pilot the WHO-CST.

Experienced social workers and psychologists from several NGOs and in the Team in Hong Kong received training and assessment from WHO-CST experts to be qualified to implement the HK-WHO-CST programme. These accredited master trainers are then qualified to implement the WHO-CST programme themselves and train other trainers and facilitators to implement the programme. While the trainers and facilitators instructed under these accredited master trainers were allowed to deliver the programme to parents, they were not permitted to train other trainees. In the case of Hong Kong, all WHO-CST programme teaching materials were translated into Traditional Chinese. Lessons and guidance for the home visits were all conveyed in Cantonese, which is the colloquial language used by the major population in Hong Kong. During the COVID-19 pandemic from the beginning of 2020, all the group-based sessions were delivered by the Team via video lectures and tutorials (eg, small group discussions) through a cloud-based peer-to-peer software platform, and the home visit session that investigated how parents interacted with their children took place in a training room situated at the University of Hong Kong.

THE PRESENT STUDY

This study evaluates the effectiveness of the WHO-CST through a randomised controlled trial (RCT) design in the Hong Kong-based Chinese community, and examines potential factors that hinder or promote the usefulness of the WHO-CST programme.

Participants

Caregiver–child dyads were recruited through advertisement on social media and promotion at district level through cooperating NGOs. The recruited caregiver–child dyads had to fulfil a set of inclusion criteria to be admitted into the programme. For caregivers, inclusion criteria include the following:

► Hong Kong residents.
► Aged at least 18 years.
► The primary caregiver who is responsible for the role of parenting the child. This could be the biological parent–father or mother– guardian or other adult family member (ie, the same caregiver who will attend the WHO-CST programme if they agree).
► Living together with the target child.
► Able to communicate in Cantonese.
► Able to read and write basic Traditional Chinese.
► Able to stay in Hong Kong for at least 6 months, for home visits and nine sections of face-to-face group intervention.

► Accessible by phone.

In addition, to ensure adherence to the WHO-CST programme, these caregivers agreed to the following procedures during the programme implementation:

► Agree to take their children to the university setting and attend the three home visit sessions and record videos for assessment of their interaction and communication with their children.

► Agree to be recorded by a cloud-based peer-to-peer software platform in the nine group-based sessions.

For children eligible to participate the WHO-CST programme in Hong Kong:

► Between 2 and 6 years old.

► Screened positive on the modified Chinese version of the checklist for autism in toddlers (C-CHAT-23).[33]

► Suspected of displaying symptoms or behaviours of ASD or developmental delays, such as persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behaviours, interest or activities.

► Suspected of displaying symptoms or behaviours of communication disorder, such as persistent difficulties in the acquisition and use of language across modalities and language abilities substantially and quantifiably below those expected for their age.

► The above symptoms or behaviours are the primary concerns of developmental issues the child faces as reported by caregivers or clinicians (children who are suspected of cooccurring with other conditions, such as intellectual disability, attention deficit hyperactivity disorder, specific learning disorder and motor disorder are also eligible if these other conditions are not primary concerns of developmental issues).

Sample size estimation

This protocol targets testing the clinical effect of the treatment on both rater-assessed and self-reported outcomes by caregivers of caregiver–children interaction and compare these outcomes between the intervention group and wait-list-control group. The Team assumed a conservative effect size estimate of 0.30 (ie, moderate effect size) for the outcome measures; 80% power at 5% two-tailed significance level and 20% attrition rate. Based on Karlsson, Engebretsen and Dainty's[34] formula and suggestions, 130 caregiver–child dyads were proposed for recruitment. These were intended to be representative to draw significant results in the final analysis. Participating caregiver–child dyads were randomised to the intervention or to a waitlist at a 1:1 ratio: 65 caregiver–child dyads were randomly assigned to a treatment group to receive WHO-CST training, while another 65 caregiver–child dyads were randomly assigned to a wait-list-control condition. As the final analysis was conducted under the intent-to-treat principle, the dropout participants were included in the analysis.
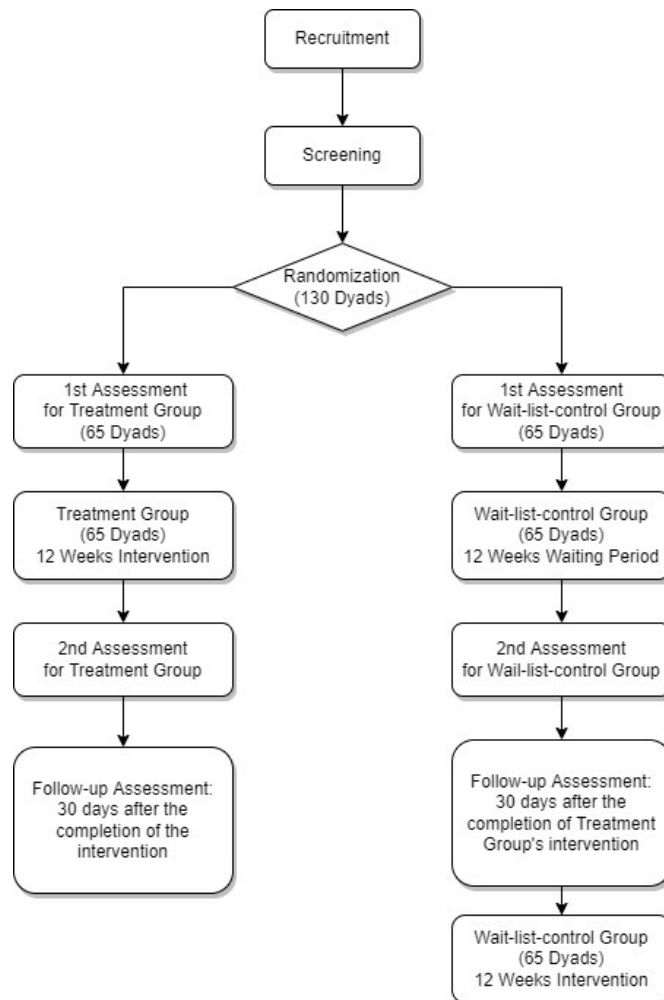
Figure 1 Flow diagram of the study's RCT design. RCT, randomised controlled trial.

Randomised controlled trial design

The caregiver–child dyad was enrolled by accredited WHO-CST programme trainers in Hong Kong and was based on the selection criteria listed above. The researcher who generated the randomised sequence for RCT was independent from the research team who recruited participants. The researcher entered caregivers' names into a Python list (in random order, expected 130 caregivers) and used the Python function 'sample()' to randomly extract 65 caregivers without replacement. The flow of the RCT design is illustrated in figure 1. Before formally starting the WHO-CST intervention, both groups completed the first assessment as the baseline for group comparison. Then, the treatment group received 12 weeks of WHO-CST intervention after the screening tasks, while the wait-list-control group waited for intervention after the 12-week waiting period. The second assessment of both groups was conducted immediately after completion of the programme. To investigate the persistent effect of the intervention, a follow-up assessment was implemented 30 days after the completion of the treatment group's intervention. In other words, the wait-list-control group took all three assessments in parallel with the treatment group

and received the intervention later. Both participants in the treatment group and wait-list-control group were blind for their assignment to the RCT experiment. The whole RCT is supposed to be completed within 7 months, including the completion of the programme for the wait-list-control group.

Since the WHO-CST is a sustained programme and multiple-parallel training sessions have been opened continuously throughout the 2 years of operation, it is normal that some caregivers had waited for 3–6 months to receive the training. Furthermore, it is a normal practice to have multiple assessments before and during the WHO-CST sessions. The assessment, training content and practices are all identical for the treatment group and the wait-list group. Therefore, the caregivers only know that they are assigned into different training time slots, but not whether they are in the treatment group or in the wait-list group.

Hypothesis

This study hypothesises that (1) after the intervention through the WHO-CST training, the treatment group's caregiving knowledge and skills will be enhanced more than the wait-list-control group and (2) after the intervention, the treatment group parents' children will misbehave less than those in the wait-list-control group.

ASSESSMENT TOOLS

The assessment tools in this study include a parents' self-reported online survey and video-taking of parent–children playtime in preset scenarios in a training room in the university setting. During the playtime, toys, duration of the playtime and instructions to parents are all standardised to minimise factors of circumstance.

Measurements in parents' self-reported survey

Participants are invited to complete a questionnaire soliciting their sociodemographic information and their child's characteristics for the first assessment. Then, in each assessment round, both the treatment groups and the wait-list-control groups are requested to complete the following outcome measures in the self-reported survey. All the outcome measures have been translated into Traditional Chinese.

Caregivers' knowledge and skill

The Caregiver Knowledge and Skills Test is designed by the WHO-CST team and is used to assess the caregivers' knowledge and skills related to the programme materials. Caregivers are invited to rate 24 statements on a 5-point Likert scale ranging from 1 (I strongly disagree) to 5 (I strongly agree). For example, 'My child has more opportunities to learn when we are focusing attention on same toy or activity'. Furthermore, caregivers are asked to indicate their confidence level (13 statements) on a 5-point Likert scale ranging from 1 (not confident) to 5 (very confident), such as 'I feel confident in using pictures to

help my child follow a routine'. Caregivers are also asked to complete three scenario-based short answer questions.

Caregivers' experience using strategies

A set of questions are used to evaluate the caregivers' experiences with the intervention strategies that they learnt during the WHO-CST programme, in terms of their level of confidence and comfort using the strategies, as well as how difficult, effortful, and natural the caregiver perceives the strategies.[35]

Caregivers' quality of life

Parents must report their quality of life in each assessment by completing the General Health Questionnaire-12 (GHQ-12). The GHQ-12 is a widely used and easy-to-understand instrument for measuring parents' psychological strain, particularly in aspects of social dysfunction and anxiety/depression. The Chinese version of the GHQ-12 has been validated in several studies.[36 37]

Children's specific autistic features

Children's suspected specific autistic features are mainly gauged using two scales. The first is the Eyberg child behaviour inventory (ECBI), which is a 36-item multidimensional scale for parents to rate their perception of their children's conduct problems, especially children aged 2–17. Parents are asked to rate how often each stated behaviour occurs on a 7-point frequency-of-occurrence scale, which generates the 'intensity score'. They are also required to indicate whether the stated behaviour is still currently a problem to them, which generates the 'problem score'. High scores represent a high frequency of children's disruptive behaviour in daily life. The Chinese version of ECBI has been validated by the Education Bureau (formerly known as the Education and Manpower Bureau), HKSAR.[19]

The second scale is the Chinese version of the modified checklist for autism in toddlers (Chinese M-CHAT). This 23-item scale is a common and easy-to-administer screening tool for identification of children with autism. It addresses aspects such as children's social relatedness, joint attention and bringing objects to show parents. Wong *et al*'s study confirms the validity of this scale on young children and its reliability for Hong Kong caregivers.[33]

MEASUREMENTS OF VIDEO-RECODED PLAYTIME

Videos of a standardised 10-min play scenario are taken for each of the participating parent-dyads at each assessment time (the first assessment, the second assessment and the follow-up assessment). All the videos are rated using the joint engagement rating inventory (JERI).[38] JERI was designed by experts cooperating with the WHO-CST and was targeted to characterise both child and caregiver's activities during the communication play protocol.[39] The scale is adapted to rate a child's engagement states as well as various aspects of the children's and caregivers' behaviour and their shared activities. The study's raters

must view the video records of the 10-min play scene in the caregiver–child interaction using skills acquired in the WHO-CST training. They judge the interaction using 7-point rating scales on 10 items:

1. Unengaged
2. Joint engagement
3. Stereotyped, restricted and repetitive behaviours
4. Attention of caregiver
5. Initiation of communication
6. Expressive language level and use
7. Scaffolding
8. Following in on child's focus
9. Caregiver's affection
10. Fluency and connectedness

These 10 items address various aspects of the caregiver–child interaction, including the child's engagement state (eg, joint engagement), child's activities (eg, initiation of communication), caregiver's support of child's activities (eg, scaffolding), caregiver's attention to child's focus (eg, following in) and dyadic interaction (eg, fluency and connectedness).

To maintain fairness and reliability of the rating practices, the rating team are not members of the research team. The rating team members are specifically recruited to rate the videos and have no direct contact nor interaction with any project participants. The rating team attend a distance training course, taught by WHO experts, on how to adopt the JERI to assess caregiver–child gameplay videos. There are five sessions (about 2 hours) in the whole training course. The trainers from WHO ensure that the raters are qualified to use JERI to rate the videos. To ensure the reliability of the coding scheme, one-third of the videos are blindly sent to two raters for rating and inter-rater reliability of each item in the JERI is calculated.

DATA ANALYSIS

Two sources of data are collected: (1) data from the online survey platform, and (2) data collected from the JERI ratings video recording of caregiver–child interactions. For the variables that are presented as continuous or count data, the between group mean differences, the SD, the range and the possible range (as provided in the instrument), are reported at different assessment time points. Given the intent-to-treat design, all caregiver–children dyads' data are contained in the original assignment group, including those who dropped out before the end of the study, and all complete the assessment at any of the three timepoints. All the outcome measurements with continuous variables (ie, JERI, GHQ12 and ECBI) are analysed using linear mixed models (LMM) with random intercept and slope parameters, where appropriate, to examine the effect of treatment assignment (treatment group vs wait-list-control group), assessment time points (T1, T2 and T3), and their interaction on the outcome. The LMM is used because of its full information-loaded characteristic, which can involve information from all randomised (intent-to-treat) participants, including

those with only partial data owing to drop out or other reasons.[40] LMM is advantageous compared with repeated measures such as analysis of covariance in that they accommodate data for missing time points, hence use all available data, and can therefore be considered in the intent-to-treat models. The latest assessments before dropout or completion of the programme are used in the model. The assessment at T2 and its interaction with group and time is the primary interest to test our hypotheses. The LMM analysis is performed using the R package lme4 and glmmTMB.

ETHICAL CONSIDERATIONS

Before the commencement of the study, ethical approval was obtained from the Human Research Ethics Committee, the University of Hong Kong (EA190101033). No foreseeable significant psychological distress or any other hazards are entailed in the study procedures.

Plan for obtaining informed consent

Written consent is obtained from all participants before completing the baseline assessment. Participation is entirely voluntary; every participant maintains the right to withdraw from the study. The caregivers are further reassured that their participation will not affect the healthcare and/or social services that the families and their children are currently receiving. The text in the informed consent form is read to all potential participants (ie, caregivers) and they have an opportunity to ask questions and express concerns (eg, the purpose of video recording). The minimal time given to the caregivers for consideration after explanation is 15–20 min. However, the caregivers can take as much time as needed to consider taking part in the study. In addition, the caregivers are informed verbally about future publications of the study in scientific literature. Confidentiality of all information obtained is ensured.

Anonymity and confidentiality

Confidentiality of all data collected is maintained and only used for research purposes. Each participant is assigned a unique identification code (ID code) that is used instead of names and thus, the identity of participants is not disclosed to unauthorised persons. Moreover, the ID codes and names are stored in separate documents from the collected data.

Data with identifiable information are kept in a locked cabinet in the research office of the JC-Aconnect team that can only be accessed by the research team. All personal data and video-recorded files are stored in password-protected files and encrypted. No data are stored on personally owned computers or portable storage devices. No personal identifiable information is reported in any of the reports or publications.

Regarding the video records made during the home visit, facilitators upload these to an online platform developed by the information and technology professionals

at the Faculty of Social Sciences of the university and only researchers have the rights to assess the online platform, which is consistently monitored by IT colleagues to protect the privacy of participants.

Role of coordinating team

The Family Support Team of the JC A-Connect project is subordinated the Faculty of Social Science, The University of Hong Kong. The Team is responsible for delivering the clinical services filling the syllabus and standard of WHO-CST, training trainers to deliver the WHO-CST programme at community level, collecting and analysing data for the evaluation of WHO-CST programme in Hong Kong.

Limitation

The aim of this study is to evaluate the implementation of the WHO-CST programme executed in Hong Kong during the COVID-19 period. As previously mentioned, parenting children with ASD can be extremely stressful, not only because of the role of being caregivers but also because of the stigma associated with the condition and the long wait for proper assessment to enter the health system. Due to the influence of COVID-19 and the related stringent public health measures implemented in Hong Kong, there was a possibility that the attrition rate could be impacted. Although our team expect a 20% dropout rate in the coming programme, the actual rate is unpredictable. It is possible that it could be higher than expected because of the convenience of doing it in an online environment. Our team will attempt to recruit more participants than the suggested number to prevent failure of the research study caused by the dropout problem.

Another limitation is the change in delivery mode of the WHO-CST. The original WHO-CST was designed to be delivered in a face-to-face group format. There should be three sessions of actual home visits for trainers to provide guidance on parent–child interaction in a real-life setting. Due to COVID-19, our WHO-CST were delivered online, and the home visits became sessions situated in a more controlled environment. Our evaluation results and the effect of training can only represent an 'on-line delivered version' of WHO-CST that may not be applicable to the traditional face-to-face WHO-CST format.

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