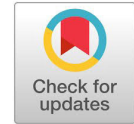




Research Article

Measuring the Validity of the Modules for Capacity Building Training of Teachers (CBTT) for Ensuring Inclusive Education Practices in Sindh Province



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ARTICLE INFO

Article history:

Received: Nov. 10, 2023

Revised: Dec. 19, 2023

Accepted: Dec. 20, 2023

Published: Dec. 31, 2023

Keywords:

Capacity building training

Diversity & disability

Inclusive education

Module development

Special educators

ABSTRACT

The study assessed the method of Capacity Building Training of Teachers (CBTT) in implementing inclusive education practices in mainstream schools of Sindh province. Using a questionnaire based on a five-point Likert scale, eight experts from special education as well as academic pedagogy assessed the modules' validity. The module content mastery requirement was established at 70%, in accordance with Othman's (2003) recommendations. The study revealed that the modules' validity score is quite high, and the study's goal is to give educators with well-rounded experience and abilities to help them develop their competency and adopt inclusive educational approaches at their institutions.

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INTRODUCTION

Training Module

A training module is a part of a course or workshop designed to teach a specific learning topic, resembling a book chapter that leads to the next. These modules

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How to Cite:

Sulman, N., Naz, S., Ali, S., & Hameed, A. ur R. (2023). Measuring the Validity of the Modules for Capacity Building Training of Teachers (CBTT) for Ensuring Inclusive Education Practices in Sindh Province. *International Journal of Trends and Innovations in Business & Social Sciences*, 1(4), 156–164.

DOI: <https://doi.org/10.48112/tibss.v1i4.677>

provide a comprehensive layer of information and present a complete story. Module design is both a privilege and a responsibility, but it can be challenging to start with.

Colman guidelines

Colman (2023) provides a step-by-step guide on developing a learning module, emphasizing preparation over material creation. These phases set the foundation for successful project implementation and effective training, ultimately ensuring successful learning outcomes. According to Colman, in professional education training, the first step involves defining the educational issue, creating a SMART objective, and creating the right training module.

The first draft is sent to experts and stakeholders for feedback, followed by a three-step design protocol (alpha/beta/gold) to prevent feedback loops. A pilot with a test audience is best practice before putting the new training into circulation. After the final version, a detailed reporting data about learning consumption is essential. Training is never a one-time experience, and it is crucial to review all training modules at least twice a year for accuracy.

Burge guidelines

Burge (2019) identifies three critical considerations when developing a module for academic courses or a guidebook for training workshops. A successful module should have clear, achievable learning outcomes, often based on Bloom's hierarchical model of learning. These objectives outline the students' development of skills over the course, starting with surface skills and progressing to deeper assessment and evaluation skills. The module should align with teaching activities and assessment methods, ensuring students engage with desired content. Contextual factors like course type, resources, disciplinary context, and national and legal requirements should also be considered to ensure a well-rounded learning experience.

Train the Trainer Guidelines

Training modules are developed through a four-step process: analysis, setting objectives, identifying elements, and forming a template. The first step involves identifying the need for training and setting attainable learning objectives. The second step involves creating instructional content, such as text, visuals, and resources. The third step involves creating interactive modules using electronic learning tools. The fourth step involves creating a template with instructions for other developers, ensuring effective communication and engagement in training modules (Toohey, 2020).

Kemp instructional design model

Morrison et al., (2011) established Kemp's instructional design model, which consists of nine interconnected pieces arranged in an oval shape. It highlights the importance of a continuous cycle of planning, design, development, and assessment for effective education. Various educational programs have used the approach (Summerville & Reid-Griffin, 2008).

UCEM: Module design framework

The UCEM (2019) approach consists of three core areas: student outcome-led design (SOLD), participatory pedagogical approach, and educator

roles. SOLD provides a consistent learning journey, starting with desired outcomes and progressing through assessment activities, teaching, and content delivery. The participatory pedagogical approach builds industry-valued knowledge through active engagement with learning content, learners, and industry networks. Educator roles include tutoring and facilitating online presence, creating a holistic learning environment.

In sum, module development is a methodical procedure that encourages active participation among participants in modern education. It improves the efficacy of the teaching and learning process, making professional achievement easier to achieve. According to research, module development improves participants' academic achievement and the teaching and learning method when guided by instructors, facilitators, or teaching staff. This procedure is energizing and potent, improving the improvement process and expected consequences.

Validation of Module

Validation testing is crucial for the legitimacy of academic or training-based module designs. Tool construction and resource generation serve as valuable guides for module developers seeking validated relevant information. Iswarawanti et al., (2019) underline the need of including a variety of information, activities, and methodologies in modules to foster student freedom and creativity. According to Yulastri et al., (2017), a module is a systematic resource that contains materials, techniques, constraints, and assessments. It also includes an autonomous learning strategy, which improves material coherence, exercises, and assessments while also offering a brief summary of the subject matter. Pendidikan (2008) asserts that a module's comprehensive, self-explanatory content enhances students' learning experience by providing supplementary resources, leading to greater knowledge retention.

Tomlinson (2012) asserts that instructional materials provide step-by-step guidelines for creating directives and should be utilized to their fullest potential for comprehensive learning, ensuring methodical creation of directives. Barraquio (2017) highlights the importance of instructional materials in enhancing learning outcomes. Using these resources in the pedagogical process enhances teaching efficacy and helps deliver high-quality outcomes. Lecture and reading are effective strategies for improving student learning, but some students learn knowledge and internalize concepts using visual aids. Richards and Rodgers (2014) suggest that the absence of learning

materials in class can negatively impact the teaching and learning process, as well as students' academic performance. The validity of a module is its ability to reliably and precisely achieve its outcomes. A high level of validity is achieved when an instrument can reliably measure variables. A module's effectiveness is considered good if it can competently examine its content and elicit the intended outcomes for evaluation.

Content validity refers to the accuracy of a research survey's measuring tool in examining the intended variables and incorporating significant features of the subject matter (Ary et al., 2010). This perspective aligns with academic discourse's content validity module. Vellis (2003) link content validity and face validity, stating that a comprehensive literature review, representative population representation, and expert evaluation are three sources for acquiring content validity (Burns, 1993). Russell (1974) introduced a method for ensuring module content validity through expert panel review, which enhances management and execution quality in module development.

Inclusive Education in Pakistan

McCausland's (2005) research reveals teachers' apprehension about inclusive education worldwide implementation and lack of understanding, suggesting it was introduced without proper preparation, providing insight into their global perspective on inclusive education. Cambridge-Johnson et al., (2014) discuss teachers' diverse viewpoints on adopting inclusive education strategies in their classrooms. Mitiku et al., (2014) emphasize the difficulties that teachers encounter while adopting inclusive education, such as inadequate preparation, a lack of competences, insufficient resources, and an absence of customized study plans in academic settings.

According to Roberts (2007), mainstream and special education teachers are unprepared to implement inclusive education practices, resulting in the exclusion of students with disabilities and increased dropout rates, raising concerns about teacher expertise. Galvan and Galvan (2017) highlight the theoretical nature of inclusion, affecting teachers' policy implementation. This study investigates teachers' experiences and attitudes towards inclusive education, highlighting the impact of a lack of understanding. The purpose of this research is to look into the inefficient implementation and restricted

scope of inclusive education programs in mainstream schools in Sindh, Pakistan. A key issue is the absence of effective teacher training and development programs, particularly in urban and rural schools. According to academic study, teacher preparation is insufficient and adds to uncertainty about the implementation of inclusive education. The study looks on the impact of a professional development workshop for special education and general education teachers in Sindh.

METHODOLOGY

Objectives of the study

The initiative aims to develop a capacity-building strategy for both prospective and in-service teachers to ensure they acquire the necessary skills and competencies. The objectives of the study include the following:

- To obtain a thorough grasp of the fundamental concepts and principles of diversity and inclusion.
- To improve teachers' perceptions and knowledge of disability.
- To give participants with the resources they need to create a climate that promotes healthy and productive learning in inclusive schools.
- To improve participants' capacity to identify and use materials focused at supporting inclusive practices in the classroom.

Description About the Workshops' Sites

The investigators convened two distinct workshops. During the 2022 floods, which severely impacted Sindh and caused major damage to residential, transportation, farming, irrigation, and communication systems, the project team hosted eight workshops in Karachi. Sindh province's education system is projected to be severely impacted, with nearly 2.5 million pupils potentially skipping school. Many public schools have been converted into shelters for displaced people, disrupting educational continuity and the present academic year. This has led in the destruction of instructional resources as well as significant harm to educational infrastructure, which will necessitate cleaning and repair work. Table 1 contains all the information about the eight [08] workshops.

Table 1

Workshops details organized by the project team in Karachi City

Details of the workshops organized only in Karachi during the 2022 flooding period			
Participants	Date	Venue	No. of Participants
1] Govt. School, District Malir [in-service teachers]	August 26, 2022	Government Secondary School	18
2] Final year students of Special Education [pre-service teachers]	September 11, 2022	Department of Special Education, University of Karachi.	23
3] Govt. Secondary School, Adjunct to University of Karachi, [in-service teachers]	September 26, 2022	Department of Special Education, University of Karachi.	15
4] Final year students of B.Ed 2.5 years [pre-service teachers]	October 07, 2022	Department of Teacher Education, University of Karachi.	31
5] Final year students of B.Ed 1.5 years [pre-service teachers]	October 27, 2022	Department of Teacher Education, University of Karachi.	26
6] In-service inclusive education teachers [Cliff school & Aziz Begum school]	November 10, 2022	Department of Special Education, University of Karachi.	14
7] In-service private school teachers	November 24, 2022	Department of Special Education, University of Karachi.	20
8] Pre-service combined workshop for students nominated by Department of Education, Teacher Education & Special Education.	December 04, 2022	Department of Teacher Education, University of Karachi.	30
No. of in-service teachers = 67 [38 percent]			
No. of pre-service teachers = 110 [62 percent]			
Total = 177			

The project team conducted the remaining six workshops in different districts of Sindh province, including Karachi, Hyderabad, Mirpurkhas, Shaheed Benazirabad [Nawabshah], Sukkur, and Larkana. These training seminars were made possible thanks to the assistance of the Sindh Government's Department of Empowerment of Persons with Disabilities (DEPD). Table 2 covers all of the information regarding the six [06] workshops arranged with the help of the Sindh DEPDP.

Table 2

Workshops details organized with the collaboration of DEPDP, Govt. of Sindh

Participants	Date	Venue	No. of Participants
1] Regional Directors [RDs] & Deputy Directos [DDs], DEPDP, Govt. of Sindh	January 12, 2023	Karachi	49
2] In-service teachers from both special & general education system	January 27, 2023	Karachi	42
3] In-service teachers from both special & general education system	February 10, 2023	Hyderabad	45
4] In-service teachers from both special & general education system	February 17, 2023	Mirpur Khas	40
5] In-service teachers from both special & general education system	March 03, 2023	Shaheed Benazirabad	41
6] In-service teachers from both special & general education system	March 17, 2023	Sukkur/Larkana	29
Total = 246			

Procedure adopted for module development

A meeting was held at the Department of Special Education, University of Karachi focused on improving module material for a capacity-building training program for in-service teachers. Ten experienced general/special education teachers and ten Regional Directors or Deputy Directors nominated by the Government of Sindh's Department of Empowerment of Persons with Disabilities (DEPD) attended the conference. Finally, it was unanimously decided that the five modules have been prepared and will be disseminated in an eight-hour session.

The method adopted by which the research team has been designed modules and supporting materials for the capacity building training of teachers included a multi-stage process of topic selection, development, and refinement that relies on the input and expertise of a wide variety of sources. Table 3 shows seven steps' process that the research team was used to work systematically through each element of module design, adapted from the ABC approach to learning design, developed at University College London (Healey, 2014). This approach draws on the idea of constructive alignment to ensure that intended learning outcomes, assessment and teaching and learning activities are all aligned and working to the same end.

Table 3

Steps in the process used to work systematically through each element of module design

Stages	Description
Stage 1: Write module description	The discourse provides detailed descriptions of each module, its subject matter, delivery methodology, and evaluation techniques, with the principal investigator documenting any necessary pedagogical or evaluative techniques.
Stage 2: Writing learning outcomes	This stage involved outlining participants' anticipated accomplishments, including learning outcomes and competence in the subject matter, while restricting learning outcomes as a pragmatic strategy.
Stage 3: Brainstorming questions	Brainstorming is a group collaboration technique that promotes creative problem-solving through open exchange of ideas, surpassing traditional interaction due to its focus on consensus over independent judgment.
Stage 4: Content development	A systematic module was developed, incorporating detailed learning activities, resources, and wraparounds, available at no cost during registration, considering various learning types and methods.
Stage 5: Exercises and Other Learning Activities	This section outlines instructional tasks, multimedia presentations, quizzes, and self-directed activities in a module, including instructions for creating, participating, submitting, or completing each, and prompt feedback on comprehension and retention.
Stage 6: Assessments/ Evaluations	Assessment is crucial in all instruction, including workshops, for evaluating teaching dynamics, identifying improvement areas, and assessing knowledge changes resulting from the workshop.
Stage 7: Create a timeline	A training day workshop should be comprehensive, offering interactive practice sessions and a suitable conclusion, while one-day programs are ideal for beginner courses.

Alpha, Beta and Gold versions of the project modules

The 'alpha draft' is the first version of a training program for special and general education teachers. Researchers investigated a variety of educational approaches, such as modifying instruction methods, raising concentration and engagement, expanding pedagogical input, and merging cognitive processing strategies with scholarly acquisition. The first draft featured five unique modules (see Table 4) that took into account the setting and incorporated various approaches to improve the training experience.

Table 4

The 'Alpha Draft' of modules

Module No.	Title of the Module	Scope
Module I	Special needs awareness	Concept of disability & its consequences
Module II	The inclusive classroom	What does a teacher need to know?
Module III	Education for children with special needs	Reasonable accommodation & adaptation
Module IV	Planning instructional design for all students	Differentiated instruction
Module V	Developing as a professional teacher	How to work as a 'master trainer'?

The 'beta draft' refers to the revised second edition of a training program, which was amended after receiving quality feedback from evaluators. The goal was to provide more relevant and condensed themes for focused learning. The beta version added several additional themes, as listed in Table 5.

Table 5

The 'Beta Draft' of modules

Module No.	Title of the Module	Scope
Module I	Introduction to Inclusive Education	The text discusses the planning and construction of schools, classrooms, programs, and activities to ensure that all children learn and engage together.
Module II	Universal Design of Learning	The Universal Design for Learning (UDL) approach is a teaching strategy that ensures equal chances of success for all students.
Module III	Differentiated Instruction	Differentiation is the process by which teachers modify their teaching methods to suit the unique learning requirements of their students, thereby enhancing the learning experience.
Module IV	Developing a Model Inclusive School	Inclusive schools are mainstream education environments where students with and without learning difficulties study together, addressing academic, social, emotional, and communicative needs, promoting diversity in classrooms and schools.
Module V	Developing a Professional Inclusive Leader	Inclusive leaders foster a supportive environment where team members feel valued, respected, and understood, promoting a psychologically secure space for everyone to express their thoughts and opinions.

Inclusive methods require skilled trainers with expertise in Braille, sign language, mobility, and literacy education. A unique in-service training program was created, including learning modules, instructional tools, and a virtual platform. The current discussion focuses on the 'Gold/Final Version' of these modules, which are divided into sub-units. Table 6 displays the final modules and their sub-units.

Table 6

Description about the 'GOLD' – Final Version of the Modules

Module No.	Title of the Module	Scope
Module I	Diversity and Inclusion	Diversity promotes understanding and acceptance for individual differences, hence creating a safe and loving atmosphere. Inclusion fosters cultural acceptance and welcoming of diverse groups or individuals.
Module II	Disability awareness	Disability awareness has become increasingly important in recent decades, fostering empathy between individuals with disabilities and society, and reducing conventional thinking, thus promoting a positive, inclusive society for all.
Module III	Inclusive education	The text discusses the planning and construction of schools, classrooms, programs, and activities to ensure that all children learn and engage together.
Module IV	Inclusive school	Inclusive schools are mainstream education environments where students with and without learning difficulties study together, addressing academic, social, emotional, and communicative needs, promoting diversity in classrooms and schools.
Module V	Inclusive classroom	The classroom focuses on helping children develop their skills in a supportive, safe, and in a dignified atmosphere.

Module components

Each module features six (06) components: (1) Module description, (2) Learning objectives, (3) Brainstorming session, (4) Lecture notes and handouts, (5) Key points for the trainer, and (6) Interactive learning activities. These modules are self-contained, self-instructional, user-friendly, adaptable, and consistent, and include all content for a single competence unit.

MEASUREMENT OF MODULES' VALIDITY

The module materials provide a comprehensive overview of the Capacity Building Training of Teachers (CBTT), outlining both general and specialized learning objectives, the program's core foundations, derivatives, and theoretical framework. They also include session schedules, instructional sessions, comprehensive CBTT program content, and a supplemental appendix. The study evaluated the accuracy of the Capacity Building Training of Teachers (CBTT) approach for implementing inclusive education practices in schools. A panel of eight experts in special education, academic pedagogy, and module creation were included in the study to examine the validity of module content using a systematic way. This technique, utilized earlier by Alia (2019) guarantees that the module's material is read, evaluated, and verified, assuring its dependability and efficacy.

The modules' validity was evaluated using a questionnaire based on Russell's (1974) criteria, which include meeting the needs of the intended population, ensuring appropriate teaching or implementation methodology, ensuring adequate implementation time, demonstrating module

effectiveness in achieving target domain goals, and changing participants' attitudes. The questionnaire was used to confirm that the modules were appropriate. Expert panels used a Likert scale to assess the appropriateness of individual items in a study. This type of questionnaire may increase precision in results. The criterion for assessing module content mastery was set at 70%, indicating the required level of validity, aligning with guidelines from Othman (2003).

Finally, the expert panels were asked to provide suggestions for improvement, input, and responses inside the unstructured area. The expert panels' feedback and recommendations were used to improve the original draft of the CBTT. The aforementioned modules were executed on the specified target population once the draft module was refined and finalized. Table 7 shows the total validity value of CBTT material based on the expert panel's opinion. The mean score for the entire module's material is 0.803 or 80.3%, according to the findings. The panel gave the module's content having the capacity to teach vital information for adopting inclusive education strategies' a minimum of 76.3%. Meanwhile, the module has reached its intended audience with a maximum proportion of 83.8%.

Table 7

The expert measured validity for the entire CBTT content

No.	Statement	Percentage (%)	Views of experts
1.	The modules' content has been aptly chosen to cater to the targeted attendees.	87.5	Accepted
2.	The contents of the modules are being executed smoothly.	81.25	Accepted
3.	The assigned timeframe corresponds appropriately with the material covered in the modules.	80	Accepted
4.	The modules' content has the potential to enhance skill proficiency.	81.3	Accepted
5.	The module's content has the potential to impart crucial knowledge for implementing inclusive education techniques.	76.3	Accepted
Score by experts			
Score obtained		80.3	Accepted
The total overall score x 100%			
Overall content validity value		0.803	

In general, the material of this module is regarded legitimate because it exceeds a score of 0.7. This shows that the CBTT validity level is well aligned with the module's objectives and goals. Table 8 shows the findings of the expert validity verification for the sub-units and sub-scales assessed during the sessions.

Table 8

The findings of the validity for the sessions and activities measured by the panel

Validity for activities by session's module	Percentage	Views of experts
Module I: Diversity & Inclusion	81.3%	Accepted
Module II: Disability Awareness	86.3%	Accepted
Module III: Inclusive Education	77.5%	Accepted
Module IV: Inclusive School	80%	Accepted
Module V: Inclusive Classroom	83.8%	Accepted
Score obtained/Total overall score X 100	0.837 OR 83.7%	Accepted

According to Table 6, the expert validity result for the session content and activity included in the CBTT comprehensive modules was 83.7% or 0.837. Module III: Inclusive Education needs a minimum score of 77.5%, but Module II got the maximum score of 87.5%, notably in the field of Disability Awareness. As a result, it is possible to argue that the CBTT modules have a level of validity that exceeds 0.7, suggesting a high degree of accuracy. Experts also submit written critiques and ideas for researchers to enhance the module's content or activities, as indicated below:

- Because of the similarities and consistency, one expert suggests combining various activities.
- Another expert recommended that case studies be included in all sessions.
- The majority of experts agreed that each module should only feature three to four activities.

The panel of experts determined that CBTT has a validity of 83.7%, suggesting that it has successfully fulfilled its intended objective. Nonetheless, researchers used the experts' input, assessments, and recommendations to improve the sub-components of each module.

DISCUSSION

The attitudes towards children with disabilities (CWDs) have evolved over time, with the term "Inclusive Education" replacing "Special Education" in the last three decades. This refers to a unification of special and regular education, providing services based on learning needs. Inclusive education requires objective planning, teacher ordering, and content analysis. If executed thoughtfully, it can produce positive results for CWDs. To achieve the 'Education for All' goal, a comprehensive continuum of services must be available. Schools should make several

service delivery plans to meet the assessed needs of integrated children.

The conventional concept of special education entails isolating disabled students and placing them in different schools. These institutions provide specialized curriculums, pedagogical methodologies, and specialist teachers for individuals with certain impairments (Norwich, 2008; Kassah et al., 2018). A recent breakthrough, inclusive education, strives to teach all children together, regardless of challenges or differences. It encourages co-learning among all pupils and provides equal educational opportunities for all. Recognizing each child's unique needs and talents is a core element of inclusive management strategies. This paradigm was validated by Salamanca's statement at the World Conference on Disabled Education in 1994.

Despite the fact that Canada had inclusive education rules in the 1950s, some instructors still struggle with implementation due to a lack of competence, according to Timmons and Breitenbach (2004). This study analyzes teachers' experiences of development training in inclusive education, building on Timmons and Breitenbach (2004) work on teachers' knowledge. Meier (2005) agrees with Hay et al., (2001) that empowering teachers includes providing them with the information and skills they need to successfully implement inclusive education.

In professional development, workshops and in-service development programs are often employed, particularly in education and training. These strategies are intended to broaden and update your knowledge and abilities. Individual needs are met through inclusive education by addressing both external and internal impediments to learning (Timmons and Breitenbach, 2004). A workshop, according to Merriam (1998), is an interactive gathering in which participants, especially academics; discuss ideas on a certain topic. Full-time teachers receive in-service training to learn about new educational systems and policies.

The study investigates the firsthand knowledge and practical skills teachers gain through workshops and training programs promoting inclusion in the classroom. Braunsteiner and Mariano-Lapidus (2014) found that teachers' perceptions and experiences vary across communities, impacting the application of inclusive education in the classroom. Her expertise and sentiments significantly influence the process of establishing inclusive education systems.

Conclusion

This study's conclusion reveals that the modules'

validity score is fairly good. The input obtained in the form of recommendations and feedback, as well as the following adjustments implemented, increases the efficacy of the modules and the creation of quality CBTT modules in the domain of teacher training. The project's goal is to provide educators with well-rounded experience and talents that will improve their competency while also allowing them to implement inclusive educational approaches at their individual institutions.

Special education goes beyond information transmission, providing care, intrinsic motivation, and self-assurance for children with disabilities. In October 2011, the Government of Sindh established the Department of Special Education, now renamed the Department of Empowerment of Persons with Disabilities (DEPD), to create a nurturing educational environment for disadvantaged individuals. The department aims to enhance their capabilities without cost, providing unparalleled opportunities for learning and self-assurance.

The DEPDP is committed to delivering high-quality educational materials to children in fifty education centers around the province. The emphasis is on teacher education, infrastructure development, and encouraging partnership with non-governmental groups. Modern procedures are being put in place to provide high-quality teacher training, either in collaboration with specialist organizations or educational institutions, with the goal of cultivating a separate group of teachers with knowledge in disability-related issues.

International declarations have emphasized the right to a comprehensive education, which has grown into the United Nations' Sustainable Development Goals (SDGs) (United Nations, 2015). The Sindh Empowerment of Persons with impairments Bill, 2018, promotes respect for the developmental potential of children with impairments as well as their right to keep their identity.

The study suggests that capacity-building training techniques can enhance access to on-the-job training and innovative learning methodologies, and aims to establish a structure for future collaboration with the Sindh government to promote inclusive education.

Acknowledgement

The project is funded by Sindh Research Support Program (SRSP) Under Sindh Higher Education Commission, Government of Sindh (Project Code: SHEC/SRSP/SS-1/4/2020-21) and it is implemented by the Department of Special Education, University of

Karachi.

Data Availability Statement

Due to privacy concerns, the data is not publicly available. But, certain de-identified data is accessible upon request.

Competing Interests

The authors did not declare any conflict of interest. The funders had no say in the study design, collection, analysis or interpretation of the data, preparation of the manuscript, or decision to publish the results.

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