

Evaluating a school-based body image lesson in Indonesia: A randomised controlled trial

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ABSTRACT

Negative body image is a common public health concern among adolescents, globally. The aim of the current study was to evaluate the effectiveness, implementation fidelity, and acceptability of a single session, school-based universal body image intervention in Indonesia. A total of 1926 adolescents (59.4 % girls) and 12 school guidance counsellors (lesson facilitators) from nine state junior secondary schools in Surabaya, East Java took part in a two-arm open parallel cluster randomised controlled trial. In response to the changing circumstances due to the COVID-19 pandemic, half of the lessons were conducted in person and half were delivered online. Results showed that the lesson did not significantly improve adolescent body image or secondary outcomes relative to the control, though there was no evidence of harm. There were no substantive findings regarding intervention effectiveness by gender. The mode of intervention delivery (online vs. in-person) did not significantly influence the main findings. Implementation fidelity varied widely, and the lesson content and pedagogy were largely acceptable, though there was a strong preference for in-person lesson delivery. Findings have implications for researchers aiming to improve adolescent body image in low- and middle-income countries. Lessons learned can inform future school-based efforts to support adolescent body image.

1. Introduction

Negative body image is common among adolescents and is associated with a range of adverse health outcomes including depressive symptoms and disordered eating (Bornioli et al., 2021; Murray et al., 2018; Sharpe et al., 2018; Wang et al., 2019). Encouragingly, evidence indicates that negative body image among adolescents is modifiable

through intervention (Chua et al., 2020; Kusina & Exline, 2019). Further, interventions designed to improve body image often also have positive effects on secondary outcomes such as low mood (Ahuvia et al., 2022). This paper presents a fully powered randomised controlled trial (RCT) testing the effectiveness, implementation fidelity, and acceptability of a universal, school-based, single-session body image intervention for early- to mid-adolescents in Indonesia - the world's fourth

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most populated country.

Increasingly recognised as a global issue (Rodgers et al., 2023), negative body image is pervasive among adolescents in high-, middle- and low-income countries (Al Sabbah et al., 2009; Martini et al., 2022). Focusing on Asia, cross-cultural comparisons indicate that adolescents in high-income Asian countries (e.g., China, Japan, South Korea) report comparable or greater rates of negative body image compared to adolescents in high-income countries in Australia, Europe, or North America (Brockhoff et al., 2016; Choi & Choi, 2016; Maezono et al., 2019). Indonesia, an upper middle-income, Muslim-majority country in Southeast Asia, is home to one of the world's largest youth populations with approximately 46.4 million adolescents aged 10–19 years (UNICEF, 2019). Recent cross-sectional studies conducted in Indonesia show that negative body image is also prevalent and associated with adverse outcomes among Indonesian adolescents (Devaera et al., 2021; Garbett, Craddock, et al., 2023; Sukamto et al., 2018). Moreover, according to a UNICEF 2020 U-Report poll, over 90 % of Indonesian adolescents surveyed (53 % girls) agreed that they would like to learn about ways to improve their body image. However, there are few evidence-based body image interventions specifically designed for Indonesian adolescents.

1.1. School-based body image interventions

Schools are an ideal environment to deliver universal body image interventions with scope to reach all students regardless of baseline symptom severity (Chodkiewicz & Boyle, 2017; Yager et al., 2013). Universal school-based mental health interventions have advantages based on their potential to be sustainable, scalable, and cost-effective (Chodkiewicz & Boyle, 2017; Fazel et al., 2014). In addition, the school environment provides “a potentially non-stigmatising environment” for young people to access mental health related interventions (Fazel et al., 2014, p. 395). Consequently, universal school-based interventions can have population-level effects on youth wellbeing (Greenberg & Abenavoli, 2017). State education is free and compulsory in Indonesia for children and adolescents up until Grade 9 (age 15) (Dilas et al., 2019). As such, designing interventions for delivery in secondary school settings maximizes their accessibility and reach.

In a recent systematic review on universal school-based body image interventions, Kusina and Exline (2019) found that 23 of the 34 included interventions (68 %) were effective – i.e., produced a statistically significant positive difference between the intervention and control groups for at least one post-intervention assessment on at least one body image measure. Kusina and Exline (2019) identified two common characteristics of effective interventions: (1) interactive and varied pedagogy, and (2) the use of techniques targeting established risk factors for negative body image (e.g., internalisation of appearance ideals) such as cognitive dissonance (e.g., encouraging arguments against appearance ideals) and media literacy (e.g., highlighting the unrealistic nature of media or social media images). However, these findings are based upon studies conducted exclusively in the UK ($n = 5$), other European countries ($n = 5$), USA ($n = 3$) or Australia ($n = 10$), underscoring the need for effective and acceptable body image interventions elsewhere in the world.

One established way to respond to the need for universal body image interventions outside of English-speaking, high-income countries is to culturally adapt existing evidence-based programmes (Soto et al., 2018; Patel et al., 2008). As there are commonalities in appearance ideals (e.g., to be slim) and sources of appearance pressure (e.g., social media) in many regions worldwide (Rodgers et al., 2023), researchers can start by drawing on established theoretical frameworks and evidenced-based techniques, sensitising them to be relevant and appropriate for the target audience. Since Kusina and Exline's (2019) review of universal school-based body image interventions, Lewis-Smith and colleagues (2023) and Garbett and colleagues (2021) respectively reported promising results on the effectiveness and acceptability of an adaptation of the five-session version of Dove Confident Me (initially developed and tested among UK adolescents; Diedrichs et al., 2021) for use among

Indian adolescents. The success of Dove Confident Me India (Garbett et al., 2021; Lewis-Smith et al., 2023) inspired the current project.

1.2. Dove Confident Me Indonesia: single session

Single session interventions are often more acceptable, feasible, and cost-effective for stakeholders (Schleider & Weisz, 2017). Further, rigorously testing single session interventions may be particularly beneficial in Low- and Middle- Income Countries (LMICs), where governmental investment in mental health is limited (Patel et al., 2007). The development of Dove Confident Me Indonesia: Single Session is detailed in the study protocol (Craddock et al., 2021). In brief, the 90-minute intervention was designed to be integrated into UNICEF's Life Skills Education curriculum for Indonesian adolescents, a government supported initiative providing a socio-emotional learning curriculum for state secondary schools. Notably, there was only capacity for a single session intervention on body image within this framework that covered a range of topics including puberty, reproductive health, internet and social media literacy, gender equality, and caring for the environment.

Dove Confident Me Indonesia: Single Session was conceptually based on an acceptable and effective universal classroom session Dove Confident Me: Single Session developed for UK schools (Diedrichs et al., 2015). The lesson draws on evidence-based techniques including cognitive dissonance and social media literacy. Cognitive dissonance techniques aim to change an individual's belief about societal appearance ideals by encouraging participants to actively critique appearance ideals as unrealistic and costly to pursue (Stice et al., 2015). By challenging societal appearance ideals, individuals create a state of discomfort or dissonance between their own acceptance of societal appearance ideals and their critique of them. In line with cognitive dissonance theory (Festinger, 1957), this discomfort motivates the individual to alter their own idealisation of appearance ideals. Social media literacy techniques aim to increase participants' understanding that images on social media are highly curated and often digitally altered and so are both unrealistic and inappropriate comparison targets (Halliwell et al., 2011; McLean et al., 2019).

The adaption of Dove Confident Me: Single Session for an Indonesian context was conducted by the authors in collaboration with a range of community stakeholders including UNICEF Indonesia, the Indonesian Ministry of Education and Culture, the University of Indonesia, Indonesian education, health, and gender experts, translators, as well as Indonesian school guidance counsellors and adolescents. Adaptations to the intervention materials included changes to reflect culturally relevant appearance ideals in Indonesia (e.g., the ideal of light or Asian white skin) and the incorporation of images and illustrations designed to portray Indonesian people. Care was taken to ensure the materials were as inclusive and as accessible as possible. Notably, although Indonesia is a Muslim-majority country, Indonesia constitutionally respects religious freedom, officially recognising six religions. Accordingly, while the intervention materials visually represented Muslim students (e.g., with images of some girls wearing a hijab), the content was not designed to be aligned with any one religion. Further, acknowledging the vast number of languages spoken across Indonesia, attention was paid to keeping the use of Bahasa Indonesia (the country's national language) simple and accessible.

In addition to content adaptations, to be consistent with UNICEF's Life Skills Education curriculum for Indonesia, the pedagogical format was modified to accommodate modest school resources by excluding reliance on technology (i.e., no PowerPoint materials, videos etc.). Based on the findings from a pragmatic acceptability and feasibility pilot conducted in April-May 2021 with two classes from two schools in Surabaya, amendments were made to intervention materials to improve the clarity of instruction, to further simplify the language, and to enhance the design (e.g., adding more imagery and illustrations) to increase engagement.

1.3. Study aims and hypotheses

This study aimed to evaluate the effectiveness and acceptability of Dove Confident Me Indonesia: Single Session during the ongoing COVID-19 pandemic. We hypothesised that students who received the intervention would report greater improvements in body image and related psychosocial outcomes compared to those in the control condition, and that these improvements would be maintained at two-month follow-up. We also explored effectiveness results based on student gender. In line

with previous research (see Chua et al., 2020; Pursey et al., 2021), we anticipated the lesson may be more effective for girls than boys.

We also tested an additional research question pertaining to intervention effectiveness that was not detailed in the study protocol paper (Craddock et al., 2021). In the protocol paper, we planned for all lessons to be delivered online in response to the COVID-19 pandemic and the lockdown measures at that time. However, due to changes in COVID-19 restrictions during the trial period, half the lessons were conducted in-person and half were conducted online. We therefore tested for

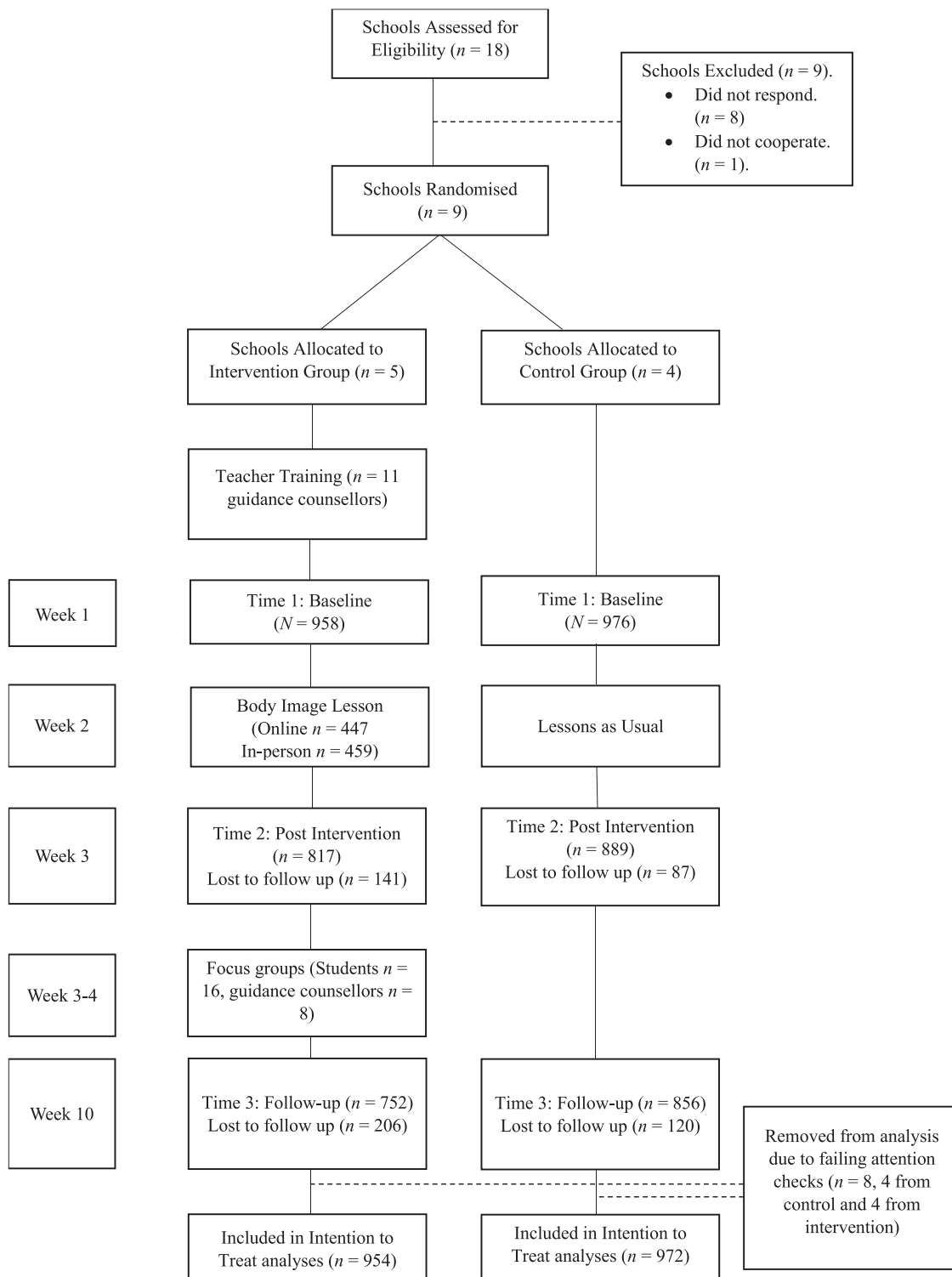


Fig. 1. CONSORT Diagram.

differences in intervention effectiveness based on lesson delivery (online versus in-person). We predicted that those who received the lesson in person would report greater improvements in study outcomes than those who received the lesson online as the lesson was designed to be delivered in person without technology aids.

In addition to testing the effectiveness of the lesson, we also assessed intervention fidelity as well as the acceptability of the intervention. Evaluating the extent to which the intervention was delivered as intended by examining factors such as intervention adherence, facilitator competency and participant responsiveness allows for more meaningful interpretation of effectiveness results (Carroll et al., 2007). We also evaluated the acceptability of the intervention considering students' and facilitators' perspectives. Understanding the acceptability of an intervention is important for informing the interpretation of trial findings, evaluating the appropriateness of the intervention to the target population, and guiding future lesson adaptation and optimisation (Sekhon et al., 2018).

2. Method

2.1. Study design

A two-arm open parallel cluster-randomised controlled trial was conducted with nine state junior secondary schools in Surabaya, East Java, Indonesia. Schools were randomly allocated to either the intervention (five schools) or lessons-as-usual wait-list control (four schools) condition. Inclusion criteria for schools stipulated that (1) schools were coeducational state schools within the Surabaya district and (2) schools had prior experience delivering lessons on video conferencing software. There were four exclusion criteria at the school level: (1) private or religious schools, (2) schools that had delivered any body image curriculum to grade 7–9 students in the past year, (3) schools that participated in the study pilot ($n = 2$), and (4) schools that were part of the UNICEF Life Skills Education programme at the time.

To test intervention effectiveness, participants completed online assessments at three timepoints: baseline (T1), post-intervention (T2; one week following the intervention session), and at 2-months follow-up after baseline (T3). See Fig. 1 for participant recruitment and retention.

To measure intervention fidelity, two assessors (hereafter: fidelity checkers) rated facilitator adherence to the teacher guide (i.e., intervention manual for facilitators), facilitator competence, and participant engagement.

To assess lesson acceptability, a mixed-methods approach was used. Students in the intervention condition were asked to provide qualitative and quantitative feedback after participating in the lesson in the T2 survey. School guidance counsellors who facilitated the lesson were asked to provide qualitative and quantitative feedback via an online survey. Six online focus groups (four student and two counsellor) were held to gather more in-depth qualitative data.

2.2. Participants

Students in grades 7 through 9 at the nine recruited schools were eligible to participate in the study providing they had access to an internet enabled device and were proficient in Bahasa Indonesia.

Sample size was determined a priori as detailed in the study protocol (Craddock et al., 2021). The target study sample size was 2000 adolescents: 1000 (500 girls, 500 boys) in the intervention condition and 1000 (500 girls, 500 boys) in the control condition. This allowed for >95 % power for any positive range of correlation between baseline and outcome data at T2 and >90 % power for separate analyses for girls and boys.

2.3. Measures and materials

2.3.1. Demographic information

At baseline (T1), participants were asked to self-report demographic information (i.e., age, gender, ethnicity, and religion).

Socio economic status (SES) was collected at the school level. Guidance counsellors were asked to report the percentage of students at their school receiving educational funding assistance from the government. Guidance counsellors also provided their rating of their school student population's SES using the MacArthur Scale of Subjective Social Status (Adler et al., 1994). Counsellors were shown a picture of a ladder with 10 rungs and were asked to indicate where they would situate their school student population in terms of access to education, money, employment etc. in relation to Indonesian society on the ladder (between 1 at the bottom – most deprived/least access to 10 at the top – most affluent/greatest access).

2.3.2. Primary outcome

Body image was measured using the Body Esteem Scale for Adolescents and Adults (BESAA) adapted and validated among Indonesian Adolescents (redacted). Participants responded to 17 items on a five-point scale from 1 (*never*) to 5 (*always*). Negative items were reversed scored and a global body esteem score was calculated with higher overall mean scores indicating greater body esteem. Cronbach's alpha for the full sample was .85 (girls = .87; boys = .82).

2.3.3. Secondary outcomes

Mood was assessed using an adapted version of the Positive and Negative Affect Schedule for Children (PANAS-C) for use among Indonesian adolescents (redacted). Participants rated 14 descriptors of positive affect (e.g., "cheerful") and 14 descriptors of negative affect (e.g., "miserable") on a five-point scale from 1 (*never*) to 5 (*always*). Higher mean scores of the positive items indicate greater positive affect and higher mean scores of the negative items indicate greater negative affect. Cronbach's alpha for positive affect = .94 (girls = .93; boys = .94). Cronbach's alpha for negative affect = .86 (girls = .86; boys = .85).

Internalisation of societal appearance ideals was measured with the Internalisation-General subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3) culturally adapted and validated among Indonesian adolescents (redacted). Participants were asked to indicate agreement with 12 items (e.g., "I wish I looked like the models in music videos") on a five-point Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). Higher mean scores indicate greater internalisation of societal appearance ideals. Cronbach's alpha = .89 (girls = .87; boys = .82).

Skin shade satisfaction was measured using a purpose-built item. Participants used a colour chart, with skin shades relevant to an Indonesian audience, numbered 1–9 (with 1 as the darkest, and 9 as the lightest shade) and were asked to indicate which skin shade best represents their current and ideal skin colour. Total scores at each time point were calculated by subtracting the ideal skin shade from baseline current skin shade scores. Scores below 0 indicate participants would like a lighter skin shade, scores over 0 indicate participants would like a darker skin shade, and scores at 0 indicate participants are satisfied with their current skin shade. Absolute values were used such that lower scores indicated greater skin shade satisfaction.

Appearance comparison was assessed using two purpose-built items. Participants were asked how often they compare their appearance to (1) celebrities and influencers and (2) people their age. The items are rated on a five-point scale 1 (*never*) to 5 (*always*). Scores were averaged, with higher mean scores indicating greater engagement in appearance comparison.

2.3.4. Fidelity assessment survey

The fidelity assessment process is detailed in the study protocol paper (Craddock et al., 2021). An online survey was developed for lesson

fidelity assessment. The survey asked fidelity checkers to rate facilitator competency based on 12 items (sample question = *to what extent did the facilitator show enthusiasm for the teaching material?*) using a 5-point scale where 1 = *never* and 5 = *all the time*. The survey also asked fidelity checkers to provide timestamps for each section of the lesson and indicate the extent to which the facilitator teacher guide was followed using a checklist of 52 main actions included in the lesson (i.e., did the facilitator do this: Y/N). Additionally, the survey also included a checklist for 12 opportunities for student participation in a whole class setting (i.e., did students respond - Y/N). There was space provided in the survey for fidelity checkers to provide specific qualitative feedback at the end of each section and any overall feedback at the end of the survey. Guiding prompts for qualitative feedback included: were there any major deviations from the teacher guide? Were there any disturbances during the lesson? Is there anything else we should be aware of about this lesson that you have not had the opportunity to mention yet?

2.3.5. Acceptability surveys

The T2 survey for intervention-condition students included a series of eight statements and three open-ended questions on the acceptability of the lesson. Sample statements for Likert questions include “*Last week’s body image lesson helped me feel better about myself*” and “*It is important for teenagers my age to participate in lessons like these.*” Participants responded from a scale of 1 (*completely disagree*) to 5 (*completely agree*), such that higher scores indicated greater agreement with the statement posed. The open-ended questions asked students what they learned, and what they liked and disliked about the lesson.

The intervention facilitator acceptability online survey included a series of 24 statements concerning teacher training, lesson content, teacher guide, and lesson delivery. Sample statements for Likert questions included “*The body image lesson is culturally appropriate for my students*” and “*I think this lesson on body image will be useful for all junior high school students in Indonesia.*” Participants responded from a scale of 1 (*completely disagree*) to 5 (*completely agree*), such that higher scores indicated greater agreement with the statement posed and so higher acceptability. Open-ended questions allowed counsellors to write about what they liked about the lesson, what they would change, and how the lesson could be improved.

2.3.6. Acceptability focus groups

Student and facilitator focus group structured schedules were developed and translated by the research team. Questions are presented in Table 1.

2.4. Procedure

Ethical approvals were obtained from two university ethics committees: one in Indonesia (KET-1373/UN2. F1/ETIK/PPM.00.02/2020) and one in the UK (HAS.20.05.174). Approval was granted by the Indonesian Ministry of Education and Culture as well as the Surabaya District Education Office. The study was registered on clinicaltrials.gov (NCT04665557) and the study protocol was published (Craddock et al., 2021).

Throughout the pilot and main RCT, the study authors worked closely with a local research agency, Cimigo. Cimigo was responsible for on-the-ground fieldwork including school and participant recruitment, liaising with schools, facilitating focus groups, transcribing focus group data, coordinating survey data collection, delivering hard copies of the lesson materials to schools, and recording lessons for fidelity assessments. The operational processes of these tasks were developed in collaboration with Cimigo researchers and refined based on the internal pilot.

Eligible schools for the RCT were invited to take part via email in September 2021. Following expressions of interest, field researchers from Cimigo met school principals to provide further details of the study. Of the 18 schools contacted, nine responded and were enrolled.

Table 1
Focus Group Discussion Schedules for Students and Intervention Facilitators.

Theme	Interview schedule	
	Student schedule	Facilitator schedule
Relevance/ appropriateness of body image issues for Indonesian adolescents	How relevant were the activities for girls/boys? What grades do you think this lesson is suitable for? How relevant was the language in the student worksheets? Do you think adolescents in Indonesia should learn about body image in schools?	Do you feel body image concerns are relevant at your school? What age group did you deliver the lesson to? Do you think body image issues are relevant to this age group? How important do you feel it is for students at junior high school to learn about body image?
Prior experience	Have you ever had lessons about body image in school before this lesson? Have you ever learned about body image before this lesson outside of school?	Have you had experience delivering lessons in this informal student-led style before? Have you any previous experience of teaching similar topics before?
Comfort participating	How did you feel about discussing body image in front of others in your class? Was there anything that made you feel uncomfortable in the lesson? Do you think there’s anything that might make others feel uncomfortable?	N/A
Overall impressions of the lesson	What did you like about the lesson? (<i>Prompt: specific activities</i>) What did you dislike about the lesson? (<i>Prompt: specific activities</i>) Was there anything you found hard or confusing about the lesson or worksheets? If so, what? Do you think the lesson has made a difference to you in any way?	Did you enjoy teaching this lesson? Did you think students enjoyed this lesson? Do you think there was anything in the lesson that students found hard to understand? Do you think the lesson content was new and/or interesting for students? How did you find the timing/pace of the activities? Do you think this lesson is relevant for Junior Secondary Schools across Indonesia? Would you modify any of the language in order to aid students understanding? Are there any key concepts you would like to see covered that aren’t already?
Teacher guide feedback	N/A	What did you think of the Teacher Guide? How can we improve the teacher guide for other teachers delivering this lesson?
The lesson online (Where applicable)	Did you have any technology-related challenges? (e.g., frozen screen, internet disconnected) Please explain.	How do you find teaching online? Do you think this lesson would be received differently by students in a face-to-face setting?
Recommendations	If you could make any changes to the lesson for future students, what would they be?	Would you recommend these workshops be delivered with mixed-gender groups in the future <i>(continued on next page)</i>

Table 1 (continued)

Theme	Interview schedule	Student schedule	Facilitator schedule
	(Prompts: format / length / content)	Was there anything we haven't asked about regarding the lesson, that you would like to tell us?	or would it be better the groups be split into single-gender groups? Do you think you will use this lesson in the future? Are there any other factors you feel we should know about or consider before we offer the lesson to other schools in Indonesia? Do you have any other recommendations or comments?

As schools enrolled, they were randomised using pre-assigned permuted blocks of 4, with 1:1 (intervention/control) allocation, stratified by geographical region in Surabaya, Indonesia (South, North, West, East). This stratification is a deviation from the protocol; the decision was made upon receiving more information on state schools in the district – stratification based on school size was not sufficiently pragmatic as they were very similar. The randomisation blocks were created by an independent researcher using the online software tool ‘Sealed Envelope’ (<https://www.sealedenvelope.com/>). Randomisation was completed by mid-November 2021.

At the time of school enrolment, state schools in Surabaya typically offered up to 25 % in-person teaching with students learning remotely most of the time. However, on 7th January 2022, prior to data collection commencing in seven out of nine schools, the District Education Office recommended schools return to 100 % in-person teaching, if health and safety protocols were adhered to, allowing for school discretion. Consequently, trial activities were conducted depending on how each school was operating at the time. That is, whether the school was delivering online, in-person or hybrid learning while continuing to minimise undue risk related to the ongoing COVID-19 pandemic. See Fig. 2 for a timeline of the various study adaptations in response to the changing circumstances in Surabaya due to the pandemic.

All eligible students from the enrolled schools in grade 7 through 9 were invited to participate in the study. Informed consent was sought from a parent or guardian for each participating adolescent, and adolescents provided informed assent before all data collection activities. Similarly, students participating in the focus groups reaffirmed their assent at the start of the online discussion.

Intervention facilitators ($N = 12$) were offered a 4.5-hours online teacher training programme and were asked to complete a self-guided E-module in December 2021 (90 min in duration), created by UNICEF Indonesia and a local digital agency, and reviewed by study authors (KN, CR, AS). Eleven facilitators attended two 90-minute synchronous interactive sessions held on a video conferencing software (Zoom) in January 2022, between one and four weeks prior to the lesson delivery as part of the trial. One facilitator was unable to attend one of the two sessions and had an individual catch up session. The sessions, led by study author CR, included psychoeducation about body image, a review of the lesson content, pedagogy and key messages, opportunities to practice delivery of sections of the lesson and receive feedback, as well as a discussion on how to deal with possible challenges. Facilitators were provided with a teacher guide to deliver the intervention. All training components were delivered/provided in Bahasa Indonesia.

Data collection for the online surveys at each timepoint was carried out either remotely (73 % of sessions) or in person (27 % of sessions) depending on whether schools were offering in-person learning. For remote survey administration, students were invited to join an online meeting on video conferencing software in class groups (mean group size = 30.5; range = 14–40 students) via their personal electronic device. The meeting was hosted by a local researcher from Cimigo, and a school guidance counsellor or class teacher was also present on the call. The researcher provided instructions on how to complete the survey, reiterated responses were confidential and were available to answer questions. For in-person survey administration, students were instructed to bring their own electronic device to school, and they completed the survey in class groups ($M = 30.8$, range = 25–40) with a school guidance counsellor or class teacher present. A local researcher from Cimigo facilitated these sessions remotely via video conferencing, with students following instructions via their own device (with headphones) or a computer set up by the teacher.

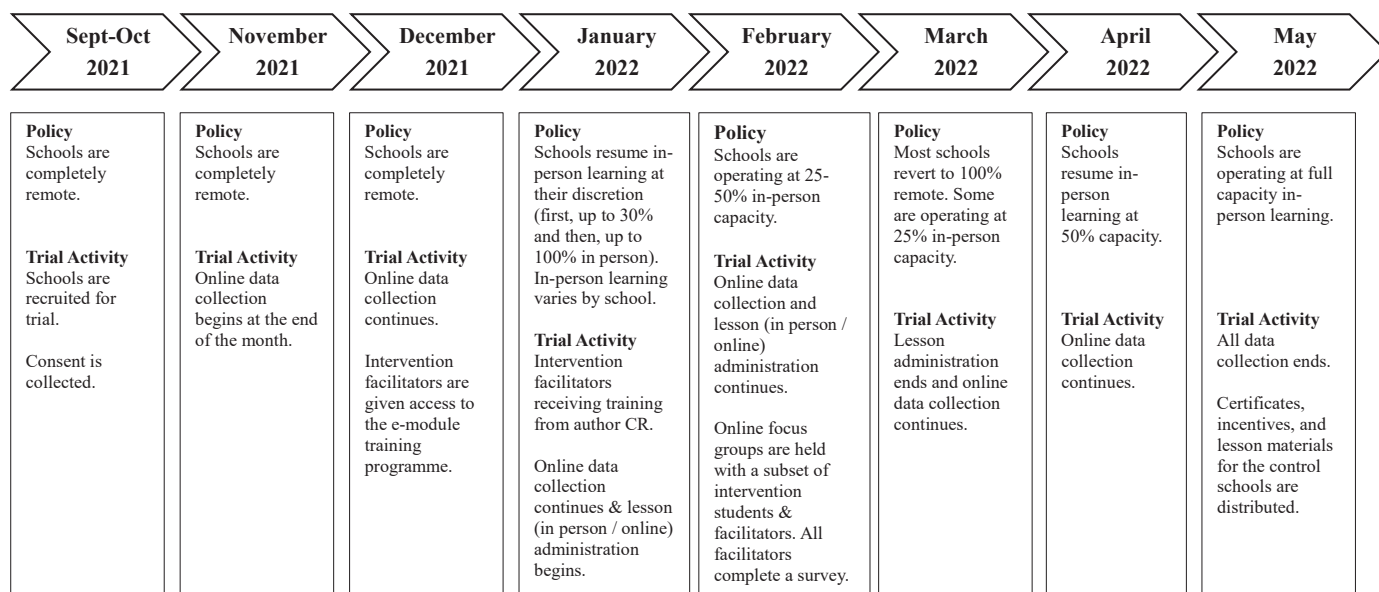


Fig. 2. Timeline Tracking COVID-19 Policies in Schools across Study Period.

At intervention-allocated schools, participating students took part in the Dove Confident Me Indonesia: Single Session lesson one week after completing the T1 survey assessment. Facilitators delivered the lesson in Bahasa Indonesia during school hours to 36 groups of students across the five schools between January and April 2022. The lesson was either online in a virtual class setting using video conferencing software ($n = 18$) or at school ($n = 18$), depending on whether the school was delivering in-person or remote learning at the time of the scheduled lesson. The average group size for the lesson was 25 students, ranging between 18 and 44 students. Group sizes were comparable for online lessons ($M = 25$ students $SD = 4.77$) and in-person lessons ($M = 26$ students, $SD = 2.89$). The average lesson duration was 102 mins ($SD = 23.25$ mins). Hardcopies of student worksheets (an A4 16-page paper booklet, printed in colour) were delivered to schools three to four weeks prior to the lesson. Students attending the lesson remotely were instructed to collect the worksheets from school at their next scheduled visit, prior to the lesson taking place.

Lesson fidelity was assessed by study authors KN and CR after trial completion using video recordings of the lessons and the online fidelity survey. In cases where lessons were conducted in person, the camera focused on the intervention facilitator. A total of 33 of 36 of the lessons were assessed for fidelity (three in-person lesson recordings were not available) by either study author KN or CR. A third of lessons ($n = 10$) were double coded to assess inter-rater reliability.

Lesson acceptability data was collected remotely, using online surveys and video conferencing technology for focus group discussions. All students in the intervention condition were asked to provide feedback on the lesson at the end of the post intervention (T2) questionnaire. Facilitators were also asked to fill out a short online acceptability survey after delivering all their scheduled lessons. A total of 16 students ($n = 8$ girls) from two intervention schools participated in one of four single-gender online focus groups. These were held between T2 and T3 survey assessments and lasted 103 min on average. Six facilitators from two of the intervention schools participated in one of two online focus groups after all the lessons had been delivered. These lasted 119 and 150 min each. Schools were selected such that one had delivered lessons online and the other had delivered lessons in person. All six focus groups were facilitated by a female researcher from Cimigo and were conducted in Bahasa Indonesia.

To facilitate attendance at the survey assessment sessions and lesson, internet data packages were provided to all participating students (Indonesian Rupiah (IDR) 45k) and facilitators at the intervention schools (IDR 100k). Students (IDR 45k) and school staff (IDR 50k) at the control schools were also given data packages to attend the survey assessments. Students were given an electronic copy of a debrief sheet which provided localised sources of support and directed students to reach out to their school counsellor to address any concerns they may have. On completion of the trial, all participating students, facilitators, and schools received a hardcopy certificate for their involvement in the trial. Schools were also awarded a plaque for their contribution and were provided a school report which detailed the outcomes of the trial. Students who completed all three timepoints were given an additional small thank you souvenir: either a water bottle or earphones. Finally, control schools were given access to the training materials to deliver the intervention at their own discretion.

2.5. Statistical analysis

Statistical analyses were run on SPSS 28.

2.5.1. Hypotheses testing & post-hoc analyses

The effect of the intervention on the primary and secondary outcome measures was examined by running Linear Mixed Models (LMM) with random intercepts on an intention-to-treat (ITT) basis. The models included baseline measures at T1 as a covariate, randomised group as a two-level between-subjects factor, study phase (T2, T3) as a two-level

repeated measures factor, an unstructured covariance matrix, and Restricted Maximum Likelihood estimation method. School was included as a random effect. The statistical model was composed of one three-way interaction between covariate, phase, and randomised group; three two-way interactions (covariate*phase; covariate*randomised group; phase*randomised group); and three main effects (covariate, phase, and randomised group). For effect size estimation, we calculated partial eta squared (η_p^2) for each model factor. In line with Cohen (1973) $\eta_p^2 = 0.01$ indicates a small effect, $\eta_p^2 = 0.06$ indicates a medium effect, $\eta_p^2 = 0.14$ indicates a large effect.

To estimate whether randomised group significantly contributed to the models, we ran -2 Log Likelihood tests ($-2LL$) comparing the complete LMMs described above to the same model but without randomised group and its interactions. For the $-2LL$ test, the two LMMs were run with an unstructured covariance matrix and the Maximum Likelihood estimation method.

For each outcome, we ran two pre-planned ANCOVAs to verify the effect of randomised group T2 and T3 separately. These models included baseline as a covariate, randomised group as a fixed factor, and outcomes at either T2 or T3 as dependent variables. In addition, we tested for time trends considering randomised arm separately. After splitting the data by condition (intervention or control), we ran post-hoc repeated measures ANOVAs for each measure to test differences between each study time point.

2.5.2. Exploratory analyses

2.5.2.1. The effect of gender on intervention effectiveness. Outcomes were explored with two pre-planned ANCOVAs testing the effect of randomised group T2 and T3 and including gender as a factor. These models included baseline as a covariate, randomised group and gender as fixed factors, and outcomes at either T2 or T3 as dependent variables.

2.5.2.2. The effect of online vs. face-to-face delivery on intervention effectiveness. Concealment of condition allocation was lifted after main hypotheses-testing analyses were complete to enable the data analyst to conduct additional within-group analyses assessing the effect of online vs. in-person delivery of the intervention. To assess for the impact of online vs. face-to-face delivery, ANCOVAs with a three level between-subjects sub-arm as a fixed factor (face to face delivery vs. online delivery vs. control condition), outcome levels at baseline as covariates, and outcome at either T2 or T3 as dependent variables were conducted.

2.5.3. Quantitative data preparation for effectiveness testing

Attrition rates across conditions, time points, and variables stayed below 20 %. Since the preliminary power analyses accounted for attrition rates of 50 %, the analyses remained sufficiently powered.

The data of participants who incorrectly answered at least one of two attention checks per time-point were excluded from the analyses for said time-point and were reported as missing. This resulted in the exclusion of eight students at T1 (four from the control condition; four from the intervention condition), three students (intervention condition) at T2 and three students (intervention condition) at T3. Participants who did not complete at least 80 % of the items on a given scale were omitted from the analyses of said outcome. This excluded data was also reported as missing.

We performed missing data analyses on the final dataset. Independent sample t-tests confirmed that missing data for the primary outcome measure (BES) at both T2 and T3 was not dependent on baseline body esteem scores ($t(1891) = .152$, $p(\text{two-sided}) = .88$ at T2; $t(1891) = .408$, $p = .684$ at T3). Analyses using Little's MCAR test, indicated that missingness was consistent with data being missing completely at random both between T1 and T2 ($\chi^2 = 0.841$, $df = 2$, $p = .657$) and between T1 and T3 ($\chi^2 = .185$, $df = 2$, $p = .912$). The LMMs and ANCOVAs were conducted without performing data

imputation. Data imputation and per-protocol analyses were not conducted to avoid introducing bias in the distributions of the outcome variables.

The LMMs and ANCOVAs assumptions of linearity of residuals, continuous dependent variables, homogeneity of regressions slopes, homogeneity of covariance matrixes, and absence of collinearity were met for all the outcomes. Despite not meeting perfect normality, all residuals of the trait outcomes at T2 and T3 presented only minimal skewness ($-2 < \text{skewness} < +2$) and minimal kurtosis (excess kurtosis < 5). The data was not transformed, nor outlier scores substituted, given that ANCOVA is robust against the violation of normal distribution of residuals when conducted with an appropriate sample size and groups of equal size (Xi et al., 2018).

2.6. Implementation fidelity assessments

Means were calculated for facilitator competency characteristics items. Intervention adherence and student participation were calculated by a simple count of sections of the materials covered, which was then converted into a percentage. Qualitative comments on the lesson provided by the fidelity checkers were analysed using content analysis (Downe-Wamboldt, 1992) by study author MB following translation to English.

To assess the inter-rater reliability for lessons that were rated twice, we used Cohen’s Kappa (measuring the strength of inter-rater agreement for dichotomous rating scales) for intervention adherence and Intra Class Correlation Coefficient or ICC (measuring the strength of inter-rater agreement for continuous or ordinal rating scales) for facilitator characteristics. Cohen’s Kappa values below 0.20 suggest little to no agreement, values between 0.21 and 0.40 reflect fair agreement, 0.41–0.60 reflect moderate agreement, 0.61–0.80 reflect substantial agreement, and 0.81–1.00 reflect near perfect agreement (Landis & Koch, 1977). ICC values less than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability (Koo & Li, 2016). Data that does not meet the inter-rater reliability threshold for Cohen’s Kappa (< 0.20) or ICC (< 0.5) will be discounted (i.e., not analysed).

2.7. Acceptability data analysis

Qualitative acceptability feedback provided in the online surveys and focus group discussions was analysed using content analysis (Downe-Wamboldt, 1992). Content analysis was led by study author MB and was conducted on translated data. It was subsequently reviewed in both English and Bahasa Indonesia by study authors CR, KN, LS, and BM. Quantitative acceptability feedback from the online surveys was analysed using descriptive statistics.

3. Results

3.1. Participants

Participants were 1926 adolescents (59.4 % girls) attending the nine recruited schools ($M_{\text{age}} = 13.7$ years, $SD = 1.0$) and 12 school guidance counsellors from the five intervention schools. Nearly all students enrolled into the trial were born in Indonesia (99.8 %), spoke Bahasa Indonesia as their first language (75.6 %), were Javanese (94.1 %), and were Muslim (89.9 %). See Table 2 for student participant demographics.

School guidance counsellors were selected as the intervention facilitators based on insights from the internal pilot and discussions with the intervention schools. It is relatively common for school guidance counsellors in Indonesian state schools to offer whole class sessions (Hidayah et al., 2022). This was the case for nine of the 12 participating counsellors, who met with class groups on a weekly basis. The remaining

Table 2
Demographics Characteristics of Participants at Baseline.

	Total (N = 1926)	Intervention (N = 954)	Control (N = 972)
Age years, mean (SD)	13.7 (1.0)	13.8 (1.0)	13.6 (1.0)
Age (years), N (%)			
11	3 (0.2)	0 (0)	3 (0.3)
12	209 (10.9)	82 (8.6)	127 (13.1)
13	617 (32.0)	298 (31.2)	319 (32.3)
14	636 (33.0)	325 (34.1)	311 (32.3)
15	425 (22.1)	230 (24.1)	195 (20.1)
16	34 (1.8)	18 (1.9)	16 (1.1)
Another age/ Don't know	2 (0.1)	1 (0.1)	1 (0.1)
Gender, N (%)			
Boys	776 (40.3)	386 (40.5)	390 (40.3)
Girls	1144 (59.4)	567 (59.4)	577 (59.5)
Another gender identity	6 (0.3)	1 (0.1)	5 (0.5)
Born in Indonesia, N (%)			
Yes	1923 (99.8)	952 (99.8)	971 (99.9)
No	3 (0.2)	2 (0.2)	1 (0.1)
Language, N (%)			
Bahasa Indonesia	1456 (75.6)	717 (75.2)	739 (76.7)
Bahasa Inggris	14 (0.7)	4 (0.4)	10 (1.1)
Another language	456 (23.7)	233 (24.4)	223 (22.2)
Ethnicity, N (%)			
Batak	22 (1.1)	9 (0.9)	13 (1.1)
Betawi	4 (0.2)	3 (0.3)	1 (0.1)
Jawa	1812 (94.1)	898 (94.1)	914 (94.9)
Sunda	3 (0.2)	2 (0.2)	1 (0.1)
Another ethnicity	51 (2.7)	26 (2.7)	25 (2.2)
Prefer not to say	8 (0.4)	5 (0.5)	3 (0.3)
Don't know	26 (1.4)	11 (1.2)	15 (1.1)
Religion, N (%)			
Christian Catholic	35 (1.8)	16 (1.7)	19 (2.1)
Christian Protestant	132 (6.9)	73 (7.7)	59 (6.5)
Hindu	13 (0.7)	5 (0.5)	8 (0.8)
Islam	1732 (89.9)	852 (89.3)	880 (90.8)
Another religion	5 (0.3)	3 (0.3)	2 (0.2)
Prefer not to say	9 (0.5)	5 (0.5)	4 (0.4)

counsellors ($n = 3$) typically met with students in a one-to-one setting. In the trial, the school guidance counsellors (hereafter: intervention facilitators) facilitating the lesson were mostly women ($n = 10$), were between 26 and 58 years ($M_{\text{age}} = 33.0$ years, $SD = 9.1$), and had an average of 8.5 years teaching experience (range = 2 – 30 years).

The percentage of school students receiving educational funding assistance from the government ranged between 23 % and 40 % in the control schools and between 14 % and 60 % in the intervention schools. MacArthur Scale of Subjective Social Status (Adler et al., 1994) ratings for the four control schools ranged between 6 and 7, while ratings for the five intervention schools ranged between 3 and 5. Taken together, the student population at the control schools was slightly more affluent than the student population at the intervention schools.

3.2. Baseline comparisons

Table 3 presents means, SDs, and baseline comparisons comparing randomised arms via independent sample t-tests. There were significant differences between the control and the intervention condition on all outcome variables, except for positive affect and appearance comparison. Body esteem and skin shade satisfaction scores were significantly higher in the control group, while negative affect and internalisation were significantly higher in the intervention group.

3.3. Hypotheses testing and post-hoc analyses

Table 4 presents all the results from the pre-planned main effects ANCOVAs.

Table 3
Means and Standard Deviations of all Outcome Measures at Baseline and T-tests of Baseline Differences.

Outcome M (SD)	Score Range	Intervention	Control	t-test
Body Esteem	1–5	3.20 (0.62)	3.28 (0.62)	$t(1891) = 2.62, p = .009$
Positive Affect	1–5	3.65 (0.60)	3.63 (0.59)	$t(1891) = -0.72, p = .469$
Negative Affect	1–5	2.80 (0.67)	2.74 (0.65)	$t(1893) = -2.15, p = .032$
Internalisation	1–5	2.88 (0.81)	2.79 (0.83)	$t(1894) = -2.50, p = .012$
Appearance Comparison	1–5	2.64 (1.03)	2.56 (0.99)	$t(1893) = -1.81, p = .070$
Skin Shade Satisfaction	0–8	1.41 (1.46)	1.28 (1.37)	$t(1888) = -2.62, p = .029$

Table 4
Main Effects ANCOVAs Comparing Intervention and Control Group Mean Scores on Study Outcomes.

Outcome	Intervention M (SD)	Control M (SD)	F	p	η_p^2
<i>Body esteem</i>					
T1	3.20 (0.62)	3.28 (0.62)			
T2	3.22 (0.59)	3.29 (0.59)	0.486	.486	0.000
T3	3.24 (0.61)	3.27 (0.60)	0.402	.526	0.000
<i>Positive affect</i>					
T1	3.65 (0.60)	3.63 (0.59)			
T2	3.60 (0.63)	3.56 (0.62)	2.311	.129	0.001
T3	3.60 (0.60)	3.58 (0.63)	0.333	.564	0.000
<i>Negative affect</i>					
T1	2.80 (0.67)	2.74 (0.65)			
T2	2.73 (0.67)	2.67 (0.67)	0.572	.450	0.000
T3	2.77 (0.67)	2.69 (0.66)	2.632	.105	0.002
<i>Internalisation</i>					
T1	2.88 (0.81)	2.79 (0.83)			
T2	2.82 (0.77)	2.75 (0.82)	0.890	.346	0.001
T3	2.85 (0.75)	2.76 (0.81)	0.042	.837	0.000
<i>Appearance comparisons</i>					
T1	2.64 (1.03)	2.56 (0.99)			
T2	2.66 (0.93)	2.64 (0.99)	4.458	.035	0.003
T3	2.75 (0.96)	2.69 (0.99)	0.007	.932	0.000
<i>Skin shade satisfaction</i>					
T1	1.41 (1.46)	1.28 (1.37)			
T2	1.67 (1.27)	1.54 (1.25)	0.201	.654	0.000
T3	1.65 (1.20)	1.57 (1.22)	0.001	.980	0.000

3.3.1. Body esteem

The -2LL test comparing the full model and the model without the effect of randomised group and its interactions was significant, indicating that randomised group significantly contributed to the model ($\chi^2 = 16.16, df = 4, p = .003$). Conversely, the pre-planned ANCOVAs showed non-significant effects of randomised group on body esteem at T2 and T3. The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a non-significant effect of time on body esteem in both the intervention group ($F(2, 1390) = 2.71, p = .072$) and control group ($F(2, 1566) = 0.56, p = .547$).

3.3.2. Positive affect

The -2LL test comparing the full model and the model without the effect of randomised group and its interactions were non-significant, suggesting that randomised group did not significantly contribute to the model ($\chi^2 = 5.28, df = 4, p = .260$). Similarly, the pre-planned ANCOVAs showed non-significant effects of randomised group on positive affect at T2 and T3.

The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a significant effect of time on positive affect in the intervention ($F(2, 1388) = 3.45, p = .033, \eta_p^2 = 0.001$) and control ($F(2, 1562) = 10.06, p < .001, \eta_p^2 = 0.010$) group. In the intervention group, there was a significant decrease in positive affect between T1 and T2 ($t(785) = 2.50, p = .013$) and between T1 and T3 ($t(733) = 2.50, p = .013$). Similarly, in the control group, there was a significant decrease in positive affect between T1 and T2 ($t(857) = 4.97, p < .001$) and between T1 and T3 ($t(841) = 3.33, p < .001$).

3.3.3. Negative affect

The -2LL test comparing the full model and the model without the effect of randomised group and its interactions was non-significant, indicating that randomised group did not significantly contribute to the model ($\chi^2 = 4.82, df = 4, p = .306$). Similarly, the pre-planned ANCOVAs showed non-significant effects of randomised group on negative affect at T2 and T3.

The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a significant effect of time on negative affect in the intervention ($F(2, 1386) = 6.43, p = .002, \eta_p^2 = 0.009$) and control ($F(2, 1564) = 7.53, p < .001, \eta_p^2 = 0.009$) group. In the intervention group, there was a significant decrease in negative affect between T1 and T2 ($t(785) = 3.97, p < .001$). Then, there was a significant increase between T2 and T3 ($t(704) = -2.14, p = .033$). In the control group, there was a significant decrease in negative affect between T1 and T2 ($t(858) = 4.33, p < .001$) and between T1 and T3 ($t(840) = 2.68, p = .007$).

3.3.4. Appearance ideal internalisation

The -2LL test comparing the full model and the model without the effect of randomised group and its interactions was significant, indicating that randomised group significantly contributed to the model ($\chi^2 = 12.76, df = 4, p = .013$). However, the pre-planned ANCOVAs showed non-significant effects of randomised group on internalisation at T2 and T3.

The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a significant effect of time on internalisation in the intervention ($F(2, 1390) = 12.90, p < .001, \eta_p^2 = 0.018$) and control group ($F(2, 1562) = 3.45, p = .036, \eta_p^2 = 0.004$). There was a significant decrease in internalisation between T1 and T2 ($t(786) = 5.43, p < .001$) and between T1 and T3 ($t(734) = 3.16, p = .002$) in the intervention group. In the control group there was a significant decrease in internalisation between T1 and T2 ($t(857) = 3.35, p < .001$).

3.3.5. Appearance comparison

The -2LL test comparing the full model and the model without the effect of randomised group and its interactions was significant, indicating that randomised group significantly contributed to the model ($\chi^2 = 10.28, df = 4, p = .036$). At T2, the ANCOVA showed a significant effect of randomised group on appearance comparison with a greater increase in the tendency to compare appearance in the control group. At T3, the ANCOVA showed a non-significant effect of randomised group on appearance comparison.

The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a significant effect of time on appearance comparison in the intervention group ($F(2, 1386) = 4.51, p = .012, \eta_p^2 = 0.006$) and in the control group ($F(2, 1562) = 9.06, p < .001, \eta_p^2 = 0.011$). In the intervention group, there was a significant increase in appearance comparison between T1 and T3 ($t(733) = -2.02, p = .044$) and a significant increase between T2 and T3 ($t(702) = -3.26, p < .001$). In the control group, there was a significant increase between T1 and T2 ($t(856) = -2.67, p = .008$) and between T1 and T3 ($t(840) = -3.10, p = .002$) and between T2 and T3 ($t(787) = -2.03, p = .042$).

3.3.6. Skin shade satisfaction

The $-2LL$ test comparing the full model and the model without the effect of randomised group and its interactions was not significant, indicating that randomised group did not significantly contribute to the model ($\chi^2 = 2.318$, $df = 4$, $p = .677$). The pre-planned ANCOVA did not show a significant effect of randomised group on skin shade satisfaction at T2 and T3.

The post-hoc repeated measures ANOVAs examining the effect of time for each randomised arm showed a significant effect of time on skin shade satisfaction in both the intervention ($F(2, 1382) = 10.60$, $p < .001$) and the control ($F(2, 1552) = 13.42$, $p < .001$) group. In the intervention group, there was a significant decrease in skin shade satisfaction between T1 and T2 ($t(784) = -3.76$, $p < .001$) and between T1 and T3 ($t(731) = -3.86$, $p < .001$). Similarly, in the control group, there was a significant decrease between T1 and T2 ($t(851) = -4.45$, $p < .001$) and between T1 and T3 ($t(836) = -5.09$, $p < .001$).

3.4. Exploratory analyses

3.4.1. The effect of gender on intervention effectiveness

Pre-planned ANCOVAs testing the effect of randomised group that included gender as a factor are reported in Table 5. The gender by randomised group interaction was not statistically significant for outcome measures at either T2 or T3 with two exceptions. ANCOVAs for negative affect and appearance comparisons at T3 showed a statistically significant gender by randomised arm interaction effect, the effect sizes were very small. Therefore, no further gender analyses were conducted.

3.4.2. The effect of lesson modality on intervention effectiveness

No significant differences on study outcomes were found when a comparison was made between students who attended online lessons, in-person lessons, and students in the control condition. The full results of these analyses can be found in the [supplementary online materials \(Table S1\)](#).

3.5. Implementation fidelity

Table 6 presents a summary of lesson fidelity for the 33 assessed lessons. Specifically, it reports mean facilitator competency scores and the percentage of lesson adherence as well as the percentage of student engagement. Table S2 presents the descriptive data for the 10 double coded lessons by assessor.

Interrater reliability was poor for seven facilitator competency items suggestive that this data is unreliable (see Table S3). These items were removed from further analysis. Therefore, interrater reliability was calculated for a total of five items. Interrater reliability for intervention adherence (Cohen's $K = 0.5$) and for student participation (Cohen's $K = 0.5$) was moderate (see Table S4).

The mean score for the five retained facilitator competency statements for all assessed lessons was 3.57 (range = 2.40–4.80). Overall, the facilitators were moderately well prepared and organised ($M = 3.63$), somewhat encouraged student participation ($M = 3.30$), showed moderate enthusiasm for the material ($M = 3.44$), created a relatively fun learning environment ($M = 3.60$), and appeared reasonably confident ($M = 3.84$). The average intervention adherence score across the 33 lessons was 64 % (range = 28–91 %), indicating that on average just under two-thirds of the lesson was delivered. Activity 1 (Appearance Ideals – the ‘Perfect-Looking’ Girl/ Boy), 2 (“Is It Worth It?”), and 3 (“Spot the Difference” Social Media literacy) were covered most consistently (67 %–72 %) while Activity 4 (“Supporting Others to Be Body Confident.”) and the Take Home Activity (“Mirror Exercise.”) were covered least (40–56 %) as facilitators ran out of time. Overall, lesson adherence was slightly higher when lessons were delivered in person compared to when they were delivered online (71 % vs. 66 %).

The average student participation score across the 33 lessons was 58 % (range = 8–100 %). Student participation was greater when lessons

were delivered in person compared to when they were delivered online (67 % vs. 50 %). Content analysis of qualitative comments provided by the fidelity checkers offer additional insights to the fidelity results. Fidelity checkers commented on 14 lessons (delivered by eight facilitators) that they felt the facilitator delivered the lesson particularly well. Six of these lessons were delivered (by four facilitators) online and eight (by four facilitators) were delivered in person, complicating the idea that in person lessons will necessarily be better quality lessons. Fidelity checkers noted low student engagement in almost half of the assessed lessons ($n = 15$; delivered by 6 facilitators) and highlighted 13 lessons (delivered by 9 facilitators) in which the facilitator ran over or out of time. Fidelity checkers also highlighted that in 16 of the assessed lessons (delivered by eight facilitators), the facilitator appeared to be using the student workbook to deliver the lesson instead of the teacher guide. Finally, assessors raised concerns in five of the lessons in which facilitators made deviations from the teacher guide and key messages of the lesson by making unhelpful comments about appearance ideals and diets. For example, in one lesson during Activity 4 (role plays to persuade characters to stop pursuing appearance ideals), the following exchange was noted by the assessor:

The student who did the role play said, "It's okay to go on a diet as long as you still eat, don't starve yourself". The teacher did not contradict this opinion at all, instead, they gave a suggestion that this teenager "still needs to eat to have the energy to do activities, but maybe you can eat smaller portions so you might lose some weight".

3.6. Acceptability

3.6.1. Students

A total of 833 (87 %) students from the five intervention schools responded to the T2 survey acceptability questions. The lesson was broadly acceptable to students (see Table 7). Of those who responded, most agreed that the lesson was taught well, found it enjoyable, helpful, understandable, important for people their age, would recommend it, and intended to take action to improve their body image.

T-tests were conducted to examine any differences in lesson acceptability between participants attending lessons online vs. in person. Those attending in person reported significantly higher mean scores on statements asking if they (i) enjoyed the lesson ($t(818) = 2.58$, $p = .005$), (ii) understood the lesson ($t(818) = 2.86$, $p = .002$), (iii) felt the lesson was taught well ($t(818) = 2.03$, $p = .021$) and (iv) would recommend it ($t(816) = 2.61$, $p = .004$). No other differences were found.

Content analysis of the qualitative acceptability survey data provided more nuanced findings. A total of 758 students described what they had learned, with 75 % writing responses that aligned or partially aligned with the lesson content (see Table S5). Students ($n = 757$) also shared what they liked about the lesson (see Table S6 in online [supplementary materials](#) for sample responses). Over a quarter of responses (27 %) were related to the lesson's impact (either feeling more confident or being more appreciative of differences). Another 28 % either referenced a specific activity (e.g., spot the differences), the interactive pedagogy of the lesson (e.g., group discussions), or how the facilitator delivered it. Remaining responses included enjoying learning about body image. Finally, 679 (73 %) of students responded to the open-ended question on what they did not like about the lesson (see Table S7 in online [supplementary materials](#)). Of these, 73 % ($n = 518$) disliked nothing about the lesson. The remaining responses were disparate; 7 % of students felt embarrassed talking about the topic, 1 % found the lesson difficult or boring, and 3 % of students found the lesson too long.

Content analysis on data provided in the four student focus groups complemented the survey data. Four themes were identified. Themes and example quotes are presented in Table S8. Students reported enjoying engaging with the lesson content and learning new insights. They shared how body image, and in turn, the lesson was relevant to

Table 5
Gender Interaction ANCOVAs for Study Outcomes.

Outcome	Girls Intervention M (SD)	Control M (SD)	Boys Intervention M (SD)	Control M (SD)	F	p	η_p^2
<i>Body esteem</i>							
T1	3.10 (0.64)	3.24 (0.65)	3.37 (0.57)	3.34 (0.53)			
T2	3.12 (0.59)	3.23 (0.62)	3.38 (0.56)	3.38 (0.52)	0.444	.505	0.000
T3	3.14 (0.62)	3.22 (0.60)	3.40 (0.56)	3.36 (0.58)	0.041	.839	0.000
<i>Positive affect</i>							
T1	3.55 (0.60)	3.55 (0.59)	3.77 (0.57)	3.75 (0.55)			
T2	3.49 (0.60)	3.46 (0.61)	3.78 (0.63)	3.73 (0.60)	0.000	.994	0.000
T3	3.50 (0.58)	3.49 (0.60)	3.75 (0.60)	3.72 (0.65)	0.077	.781	0.000
<i>Negative affect</i>							
T1	2.99 (0.63)	2.86 (0.63)	2.49 (0.62)	2.53 (0.63)			
T2	2.93 (0.63)	2.81 (0.64)	2.41 (0.60)	2.44 (0.67)	0.298	.585	0.000
T3	2.99 (0.63)	2.83 (0.61)	2.42 (0.57)	2.47 (0.67)	4.078	.044	0.003
<i>Internalisation</i>							
T1	3.08 (0.80)	2.95 (0.81)	2.67 (0.72)	2.55 (0.77)			
T2	2.98 (0.75)	2.90 (0.79)	2.57 (0.73)	2.51 (0.80)	0.332	.565	0.000
T3	2.99 (0.74)	2.90 (0.79)	2.62 (0.71)	2.55 (0.80)	0.220	.639	0.000
<i>Appearance comparisons</i>							
T1	3.02 (0.95)	2.79 (0.98)	2.17 (0.88)	2.24 (0.89)			
T2	2.90 (0.89)	2.85 (0.97)	2.26 (0.86)	2.29 (0.93)	2.977	.085	0.002
T3	3.00 (0.93)	2.93 (0.96)	2.34 (0.88)	2.30 (0.91)	3.954	.047	0.003
<i>Skin shade satisfaction</i>							
T1	1.61 (1.23)	1.44 (1.13)	1.36 (1.20)	1.37 (1.24)			
T2	1.69 (1.27)	1.53 (1.16)	1.53 (1.19)	1.52 (1.29)	0.034	.967	0.000
T3	1.70 (1.52)	1.54 (1.17)	1.56 (1.11)	1.59 (1.25)	0.062	.940	0.000

them. First, all groups referenced appearance-related bullying with many sharing personal experiences of teasing others or being teased themselves about their appearance. As one Grade 9 boy said, “there are fat people who are constantly teased, there are those who are skinny being ridiculed. I experienced being ridiculed [because of my appearance] when I was in elementary school”. Some students continued to reflect on the implications of appearance-based teasing/bullying in response to the lesson. Second, students discussed societal appearance pressures, including from mainstream and social media, which further underscored the lesson’s relevance. For example, another Grade 9 boy said:

We learn that we don’t have to put everything we see on social media into our minds, you know. Sometimes there are some things that you really don’t need to think about or to pay more attention to. But sometimes we care too much about these unnecessary things.

Students also provided constructive feedback. Online attendees found discussions in breakout rooms difficult to engage with, with students often keeping their mics and videos off. All students would have preferred to participate in person. Two of the four groups discussed feeling embarrassed or shy talking about their bodies with their peers, particularly peers of a different gender. Additionally, one boys’ group felt that the lesson may be more relevant for girls. For example, in response to a prompt by the moderator asking about the suitability of the lesson for boys, one Grade 7 student said, “[the pressures] don’t fit, don’t exist. Yes, it should be for girls”. The other boys’ group thought it may be more relevant for people already struggling with appearance-related issues. For example, one student from Grade 9 thought the lesson may be beneficial for students that “think about negative things, they can realise that, for example, it turns out that people actually don’t think that way of them.”

3.6.2. Intervention facilitators

Overall, the lesson was well received. Acceptability survey data indicated that all facilitators ($N = 12$) agreed that the lesson made sense, would be useful for adolescents in Indonesia, was appealing and relevant to their students and was enjoyable to teach. Most agreed that the lesson was culturally ($n = 10$) and age ($n = 11$) appropriate and would recommend it to other teachers ($n = 9$). All who facilitated the lesson

online ($n = 7$) expressed that student engagement would be better if lessons were in person. See Table 8 for the descriptive results for each statement.

Content analysis of the facilitator’s ($N = 12$) feedback via open-ended questions provided further insight. When asked what they liked, most commented on the lesson pedagogy and content. Five facilitators appreciated specific activities (e.g., Spot the Difference, role plays or making action plans) and several valued the integration of critical thinking into the lesson. In addition, some facilitators reported that the content was particularly relevant due to societal appearance pressure students face via social or traditional media. Finally, four facilitators felt the lesson stood to improve their students’ self-confidence.

When asked what could be improved, seven facilitators indicated that lesson materials were difficult to follow at times, and two suggested more time is needed to deliver the lesson content and advised that in person delivery would be better. Two other facilitators highlighted specific sections that would benefit from more age-appropriate imagery and language. For instance, when reflecting on an image of a woman in a sleeveless top (Activity 3: Spot the Difference), one female facilitator said, “We expected that images included in the lesson would be appropriate for the age of the respondent” with the implication that this particular image was not quite appropriate. Interestingly, four facilitators suggested expanding the scope of the lesson to include other topics and involve other student groups and family members. For example, a male facilitator said, “adding activities with the family, because apart from school, students also have many activities in the family environment.” Four facilitators had no constructive feedback, or liked the lesson as it was.

Content analysis generated four themes from the facilitator focus group data. Themes and example quotes are presented in Table S9. Facilitators were enthusiastic about the lesson pedagogy, indicating it was engaging for them and their students, and wished that more lessons adopted such varied interactive activities: one facilitator remarked, “[teaching] should be like this”. The lesson content was reported to be relevant, with facilitators citing examples of how students expressed appearance concerns (e.g., “being reluctant to eat because they feel fat”) and the prevalence of appearance-based teasing at school.

Facilitators emphasised that their students lacked confidence and

Table 6
Fidelity Summary for all Assessed Lessons (N = 33).

Lesson Id	Double coded	Online / In-person	Facilitator Competency Mean Scores (Range = 1–5)	Lesson Adherence	Student Engagement
SCH3.7.1		In Person	2.80	56 %	67 %
SCH3.7.2	Y	In Person	3.80	60 %	67 %
SCH3.8.2		In Person	3.80	67 %	75 %
SCH3.8.3	Y	In Person	3.40	46 %	42 %
SCH3.9.1		In Person	2.20	56 %	8 %
SCH3.9.2		In Person	3.00	54 %	17 %
SCH3.9.3	Y	In Person	3.00	54 %	67 %
SCH4.7.1		In Person	3.80	90 %	25 %
SCH4.7.3		In Person	4.00	88 %	92 %
SCH4.8.1		In Person	4.00	79 %	100 %
SCH4.8.2		In Person	4.40	83 %	100 %
SCH4.8.3		In Person	4.00	87 %	83 %
SCH4.9.1		In Person	4.80	69 %	75 %
SCH4.9.2		In Person	4.60	85 %	92 %
SCH4.9.3		In Person	4.00	90 %	92 %
SCH5.7.1	Y	Online	4.00	73 %	92 %
SCH5.7.2		Online	4.00	77 %	75 %
SCH5.8.1		Online	4.60	94 %	100 %
SCH5.9.1	Y	Online	4.00	81 %	75 %
SCH5.9.2		Online	3.80	60 %	58 %
SCH5.9.3		Online	4.00	73 %	75 %
SCH6.7.1		Online	2.80	69 %	83 %
SCH6.7.2		Online	3.00	63 %	50 %
SCH6.8.1		Online	2.60	63 %	25 %
SCH6.8.2	Y	Online	3.00	71 %	25 %
SCH6.9.1		Online	3.20	62 %	50 %
SCH6.9.2		Online	4.20	75 %	75 %
SCH7.7.1	Y	Online	3.20	50 %	8 %
SCH7.7.2		Online	3.80	63 %	25 %
SCH7.8.1		Online	3.60	46 %	25 %
SCH7.8.2	Y	Online	3.40	50 %	25 %
SCH7.9.1	Y	Online	3.80	58 %	25 %
SCH7.9.2	Y	Online	3.20	54 %	8 %

were reluctant to speak up and share their opinion. Some suggested this was due to appearance concerns, while others suggested this was due to “a lack of communication with family”. Facilitators highlighted that while this lack of confidence underscored the value of a lesson on body confidence, students’ reticence to speak up and participate in class discussions made lesson delivery challenging. Facilitators often needed to provide multiple different examples to ensure students understood the key messages. Consequently, they suggested further follow-up sessions to consolidate student comprehension.

Delivering the lesson raised some pragmatic challenges. Several facilitators found the teacher guide difficult to follow due to its layout and excessive use of text. Again, facilitators expressed a preference for in-person delivery, emphasising that engaging students online was harder due to poor internet connectivity and students having their cameras off.

4. Discussion

This paper presents a fully powered RCT evaluation of a universal,

school-based, single-session body image intervention designed for early to mid- adolescents in Indonesia. It reports on intervention effectiveness, fidelity, and acceptability. Despite results indicating that the lesson was broadly acceptable to students and facilitators, analyses showed that overall, the lesson was ineffective in improving students’ body image and related measures, compared with the control group. Implementation fidelity varied widely. Drawing on the current literature, a close examination of the acceptability results, and reflecting on the unique circumstances in which the trial was conducted, we share our understanding of why the lesson did not have the hypothesised impact. In addition, we present some important learnings for researchers hoping to develop acceptable and effective body image interventions.

4.1. Summary of results

Inconsistent with our hypotheses, there were no significant effects by condition or time for body esteem. There were also no significant differences by condition for positive affect, negative affect, skin shade satisfaction, or for appearance ideal internalisation though there were significant declines in each variable over time in both conditions. There was a significant difference by condition for appearance comparison at post intervention in which there was a greater increase in mean scores in the control group compared with the intervention group.

Implementation fidelity of the intervention ranged widely for the 33 assessed lessons. Facilitator competency scores based on organisation, confidence, enthusiasm, and skills in creating a fun learning environment and encouraging student participation ranged from 2.4 to 4.8 on a 5-point scale, with higher scores indicating greater competence. Intervention adherence ranged from 28 % of key messages covered to 91 % and student participation ranged from 8 % to 100 % based on 12 opportunities for whole group discussion.

The acceptability of the intervention was reasonably good. Both students and facilitators reported that the content of the lesson is relevant to adolescents in Indonesia. It was evident that young people felt societal appearance pressures from social media, celebrities, and traditional media, and that appearance-related teasing and bullying were common. While most students and facilitators said they appreciated and enjoyed the interactive nature of the lesson, students often lacked confidence to actively participate. Facilitators shared some concerns about students’ comprehension of the key messages and explained that it was often necessary to provide additional examples to support student understanding. They also highlighted that it was difficult to complete the lesson in the recommended timings. Finally, both students and facilitators indicated that the lesson was more acceptable when it was delivered in person.

4.2. Reflections of the lack of positive effectiveness results

Several studies have recently reported null effects in school-based body image interventions (Forbes et al., 2023; Yager et al., 2023). Moreover, Kusina and Exline (2019) found approximately a third of universal school-based body image interventions were ineffective. In this section, we provide reflections on why we may have found null effects despite basing the current intervention on an existing effective programme (Diedrichs et al., 2015).

4.2.1. The impact of the COVID-19 pandemic

This RCT was conducted between November 2021 and April 2022 – an unsettled period of the COVID-19 pandemic in Surabaya, with schools oscillating between resuming and then reducing face-to-face learning in response to varying infection rates. Therefore, flexibility was required to accommodate frequent changes in school operations and protect the safety of those involved. In practice, this resulted in half of the assessed lessons being conducted online and half being conducted in person at school. Additionally, some data collection took place in school but was facilitated remotely by local researchers using digital

Table 7
Frequencies, Means and Standard Deviations of Students' Responses to Likert Type Questions Regarding Lesson Acceptability (N = 834).

Statement	Frequencies %					Overall Mean (SD)	Comparison		
	Completely Disagree	Disagree	Neutral	Agree	Completely Agree		Condition	Mean	p value
I enjoyed last week's body image lesson.	0.2	0.8	29.1	47.2	22.5	3.91 (0.75)	In school Online	3.98 3.84	.005
Last week's body image lesson helped me feel better about myself.	0.2	1.4	37.3	42.9	18.1	3.77 (0.76)	In school Online	3.78 3.77	.403
I understood what was being taught in last week's body image lesson.	0.1	0.7	27.3	52.5	19.3	3.90 (0.71)	In school Online	3.97 3.83	.002
I felt comfortable taking part in last week's body image lesson.	0.1	0.7	31.7	48.0	19.5	3.86 (0.73)	In school Online	3.90 3.82	.070
Last week's body image lesson was taught well by my teacher.	0.0	0.4	14.6	51.0	34.1	4.19 (0.68)	In school Online	4.24 4.14	.021
It is important for teenagers my age to participate in lessons like these.	0.0	0.5	22.8	42.6	34.2	4.10 (0.76)	In school Online	4.13 4.08	.135
I will take action in the future to improve the body image of myself and others.	0.1	0.6	20.9	50.5	27.9	4.06 (0.72)	In school Online	4.09 4.03	.101
I would recommend this body image lesson to a friend.	0.0	1.7	38.7	43.9	15.6	3.73 (0.74)	In school Online	3.80 3.67	.004

Table 8
Frequencies, Means and Standard Deviations of Intervention Facilitators Responses to Likert Type Questions Regarding Lesson Acceptability (N = 12).

Statement	Frequencies %					Mean (SD)
	Completely Disagree	Disagree	Neutral	Agree	Completely Agree	
The body image lesson made sense to me.	0	0	0	50.0	50.0	4.50 (0.52)
I enjoyed teaching the body image lesson.	0	0	0	66.7	33.3	4.33 (0.49)
The topic of body image was appealing to my students.	0	0	0	16.7	83.3	4.17 (0.38)
The topics covered in the body image lesson are relevant to my students.	0	0	0	83.3	16.7	4.17 (0.39)
The body image lesson is culturally appropriate for my students.	0	0	16.7	83.3	0	3.83 (0.39)
The body image lesson is age appropriate for my students.	0	0	8.3	91.7	0	3.92 (0.28)
I think this lesson on body image will be useful for all junior high school students in Indonesia.	0	0	0	66.7	33.3	4.33 (0.49)
I would like to recommend this body image lesson to other teachers in Indonesia.	0	0	25.0	50.0	25.0	4.00 (0.74)

technology and requiring internet connectivity.

Continued disruption to routine for school staff, students, their families, and the wider community may have affected the results in a multitude of ways, many of which are difficult to capture. However, data from the acceptability focus groups highlighted a couple of specific COVID-19 related challenges – mostly connected with engaging in the lesson remotely. This is consistent with evidence highlighting that on-line learning was a challenge for Indonesian students and teachers, and a cause of stress and concern (Ghozali et al., 2021). A commonly expressed barrier to active participation expressed by both students and facilitators was that during online lessons in the trial, most students had their video cameras off. While the reasons for this include poor bandwidth and feelings of self-consciousness, facilitators also expressed the concern that when students have their cameras off, it is possible that students may be engaged in other activities such as helping family members with chores.

Nevertheless, even though the lesson was not intended to be delivered online and there were no digital materials (e.g., PowerPoint Presentations or videos), we found no differences in study outcomes when we compared online and in-person delivery of the lesson. This was surprising, although variation in intervention fidelity may help explain this null finding.

4.2.2. Is a single session sufficient?

We tested a single-session 90-minute intervention, designed to be completed in one sitting in Indonesian state secondary schools. Single session interventions are often more acceptable to dissemination stakeholders such as schools and are generally more scalable and cost-effective than multi-session programming (Schleider & Weisz, 2017). Single sessions can also be adapted more readily for different cultures (e.

g., Osborn et al., 2020) and circumstances (e.g., the COVID-19 pandemic; Wasil et al., 2021). However, it is possible that a multi-session intervention may have yielded more positive results in this setting. Indeed, a systematic review on school-based mental health interventions in LMICs indicates that participant benefits improve with increased structure and longer duration (Barry et al., 2013).

Acceptability data indicated adolescents were not accustomed and lacked confidence to speak up in class. Despite positive feedback on the interactive activities from both students and facilitators, assessments of student participation in group discussions indicated that students frequently did not actively engage. Low participation may have compromised the study outcomes as interactive programmes are more likely to be effective (Kusina & Exline, 2019). In addition, the active expression of counter-attitudinal beliefs, therefore eliciting cognitive dissonance, is also a central component to many effective body image interventions (Stice et al., 2015). Based on this, and educational literature highlighting a preference for memorisation and rote learning in Indonesia (Zulfikar, 2010), students in Indonesia may benefit from more (and perhaps shorter) sessions to facilitate both engagement and familiarisation with the lesson pedagogy. Our findings also indicate that more frequent exposure to psychoeducational content on body image may also be beneficial for Indonesian adolescents. The lesson topic was unfamiliar and data from the T2 survey indicated student comprehension of key messages could be improved. Facilitators similarly reported that conversations on mental health are generally scarce and are often stigmatised in Indonesia (Puspitasari et al., 2020). In this context, our single-session interactive lesson may have been a little too demanding and ambitious for the time allowed and the setting.

It is worth noting that successful *single-session* body image interventions tend to be developed and tested in high-income English-

speaking countries (Bell et al., 2022; Diedrichs et al., 2015; Halliwell et al., 2015). It is possible that when such interventions are culturally adapted or developed to different contexts, particularly those where the pedagogical style is not interactive, a lengthier intervention is required. For example, the adaption of Dove Confident Me for Indian adolescents was effective (Lewis-Smith et al., 2023), though it was a five-session programme. Another recent successful (albeit not school-based but rather media-based) intervention for improving body image among adolescent girls and young women in Indonesia was also multi-session (Garbett, Haywood, et al., 2023). Notably state body image continued to improve as participants increased their engagement with this intervention (Garbett, Haywood, et al., 2023). Multiple sessions may provide young people with more time to process and engage with the key messages and activities and allow both facilitators and students to become familiar with a more interactive style of learning.

4.2.3. Did the lesson materials need more engaging scaffolding to convey key messages?

Some effective body image interventions in LMICs have employed technology to create engaging educational content for young people. For example, the effective adaption of Dove Confident Me for Indian adolescents (Lewis-Smith et al., 2023) included videos and PowerPoint materials. In the study pilot, when asked what they liked about the programme 16 % of adolescents specifically valued the videos (Garbett et al., 2021). Other successful body image interventions targeting adolescent girls and boys in Brazil (Matheson et al., 2023) and girls and young women in Indonesia (Garbett, Haywood, et al., 2023) have done so outside of the school setting, capitalising on mobile technology and social media platforms popular with young people. Given that approximately half the students took part in the lesson online due to the COVID-19 pandemic, having digital resources may have been beneficial in engaging students and communicating key messages in the current trial. However, the original brief (pre-pandemic) was to integrate a body image lesson plan into UNICEF Indonesia's Life Skills Education Curriculum without reliance on technology to ensure the programme was accessible for all Indonesian state schools across the country.

4.2.4. Is more facilitator training required?

With limited resources built into the lesson materials (i.e., no video materials), reliance for delivering the key messages of the intervention lay with the intervention facilitators. For example, it was important that they covered all the content, clearly explained the key messages, and were skilled in encouraging student participation. Yet, implementation fidelity results revealed substantial variation in intervention adherence, facilitator competency characteristics, and student engagement. Consequently, it is plausible that more intensive, in-person, facilitator training may have improved implementation fidelity which may have influenced effectiveness results. This speculation is supported by a close examination of the effective five-session Dove Confident Me India programme (Lewis-Smith et al., 2023). In this instance, the RCT was delivered in India by four trained clinical and counselling psychologists, who each had a master's degree qualification in psychology and received two full days of in-person training. In contrast, most of the 12 school guidance counsellors facilitating the lesson in our study did not hold postgraduate degrees⁹ and received a total of just 4.5 h of online training.

Notably, the facilitators who delivered the programme in India received higher average competency ratings than those in the current trial ($M = 4.72$ vs. $M = 3.57$). Adherence to the teacher guide was also higher among the facilitators in India, with a mean of 90 % adherence across all sessions compared with 64 % in the current trial. Together, the

additional academic training and specific programmatic training received by the psychologists in India may explain some of the difference in fidelity between the two trials. While it is unknown whether or how improved implementation fidelity would have influenced the results of the trial, it would have allowed for a truer assessment of the current intervention.

4.3. Strengths and limitations

This study had several strengths and limitations. Starting with strengths, the current intervention was adapted for Indonesian state schools and UNICEF's Life Skills Education curriculum from an existing programme that was previously found effective (Diedrichs et al., 2015) drawing on the expertise from numerous different stakeholders and disciplines. Relatedly, the inclusion of a study pilot provided an opportunity for additional improvements to be made, incorporating feedback from students and facilitators, to ensure the lesson was as accessible, engaging, and inclusive as possible. As a result of these two steps, a key strength of the intervention was the inclusiveness of the imagery used and accessibility of the language, regardless of SES background.

Additionally, there are several strengths that pertain to the research design. First, the trial was fully powered which allowed for rigorous testing of the effectiveness hypotheses as well as additional exploratory analyses despite survey assessment attrition (11.5 % at T2 and 16.6 % at T3). Second, validated measures for Indonesian adolescents were used for the primary outcome (i.e., body esteem) and several secondary outcomes (i.e., appearance-ideal internalisation as well as positive and negative affect). This is noteworthy as validated measures are not always available for body image intervention testing in LMICs (Swami & Barron, 2019). Third, the comprehensive assessment of intervention fidelity and acceptability provided nuanced and detailed insights into the overall evaluation of the lesson. Such insights can be employed for lesson optimisation as well as intervention development/adaption in other LMIC contexts. Fourth, by reporting the intervention effectiveness, fidelity, and acceptability together, we have been able to present a complete picture of how the lesson worked, how it was delivered, and how it was received. Finally, an important strength of the study is its ecological validity. The intervention was delivered by school guidance counsellors rather than external experts such as psychologists or subject experts and required minimal resources. While the effectiveness results were not significant, the comprehensive nature of this evaluation provides multiple learning opportunities for future researchers to build upon to develop effective body image interventions in LMICs.

Several limitations are also noted. First, there were several risks of bias with the acceptability data. Particularly with the student focus groups, there was a selection bias towards students likely to speak up i.e., those willing to participate and be recommended by classroom teachers. There was a risk of a social desirability bias across all the acceptability data. For example, it is possible that participants were not comfortable expressing negative opinions about the lesson. Notably, in response to acceptability statements, very few participants (students and counsellors) disagreed or strongly disagreed, but substantial numbers indicated neutral or mid-point responses. While we tried to pre-empt social desirability by emphasising that constructive feedback would be extremely valuable to help improve the lesson for others, we cannot discount its presence in the data. The inclusion of a social desirability measure may be useful in future acceptability surveys. Second, this RCT adopted a cluster randomisation approach at the school level. While this strengthens the design by avoiding cross contamination between students, classes or grades, there is the potential for school-level differences to impact outcomes. For example, systemic differences like SES of the students as well as areas the schools were situated (high-income districts vs. low-income districts) may have played a role in how the lesson was received.

⁹ This is consistent with Indonesia's national guidelines for school guidance counsellors which require a bachelor's degree in guidance and counselling and completion of counselling profession education (Granello & Gunawan, 2023).

4.4. Lessons learned and future directions

Learnings from this RCT provide several recommendations for researchers developing and evaluating body image interventions in LMICs. First, in school-based interventions where there is substantial onus on the facilitators to deliver the intervention and engage students to participate to foster cognitive dissonance, great care and consideration is needed in the development and delivery of the facilitator training. Facilitators in this RCT would very likely have benefited from longer, more focused, training sessions that were in person, which would have given them greater opportunities to immerse themselves in the materials, ask questions, practice new pedagogical approaches, and receive individualised, real-time feedback. In the present study, training was delivered exclusively online to minimise the risk associated with COVID-19. While attempts were made to make this training interactive, it is notable that both the training facilitator (author CR) and the intervention facilitators expressed that in-person training would have been preferable, allowing for greater interaction, dialogue, and fewer distractions and the need to manage competing demands. Therefore, we would recommend where possible for facilitator training to be conducted in person, for adequate protected time to be allocated, and for the training to include strategies for active learning with trainers available to offer in-the-moment feedback.

Relatedly, we recommend that considerable time and effort is paid to the development and design of any supporting training or teaching materials, including the lesson workplan or teachers' guide. In the current trial, the most common constructive feedback from implementation facilitators was that the teacher guide was sometimes difficult to follow or lacked clarity. While the teacher guide was designed to be consistent with the rest of UNICEF Indonesia's Life Skills Education format by a creative design team, more time spent on optimising the design of the guide (e.g., the layout of the content) would have been valuable. One challenge was balancing providing sufficient information and directions while not oversaturating the guide with text. As such, we recommend that considerable attention is paid to the user experience of the teacher guide and that the development of the design alone goes through multiple rounds of user-testing.

A second learning pertains to the duration of the intervention for students when concepts, content, and pedagogical approach are all new. There is considerable attention and excitement in the fields of body image, eating disorders, and mental health more broadly about the promise of single session interventions (Schleider & Weisz, 2017; Schleider et al., 2023). Indeed, opting for a single instead of a multi-session design for this project was chosen due to the feasibility of readily integrating the lesson into UNICEF Indonesia's Life Skills Education Curriculum. However, the acceptability results suggested a multi-session programme, though perhaps with shorter individual lessons, may have allowed students more time to process new material and gain confidence in participating. We recommend researchers closely consider factors such as local pedagogy norms and the presence of curriculum focused on socioemotional learning and mental health in addition to feasibility considerations. Further, we recommend that research teams developing or adapting interventions for new contexts set up an advisory team of teachers and students to troubleshoot potential challenges and to make decisions on best practice for delivery. The current project greatly benefited from the expertise from a variety of stakeholders in Indonesia. Moreover, it likely would have further benefited from more opportunities for interaction and collaboration on key decisions, though this unfortunately was limited due to the backdrop of the COVID-19 pandemic throughout the project.

A final learning relates to the research design and the importance of collecting detailed acceptability and implementation fidelity data. While we are unable to point to any one factor to wholly explain why the intervention did not work, our acceptability and fidelity data allow us to clearly document the multiple challenges and difficulties specific to the intervention and trial more broadly. Such information is equally

beneficial for understanding when facilitator-led interventions are effective. Consequently, we recommend that researchers rigorously collect acceptability and implementation data and report these results alongside or in parallel with effectiveness results. This gives researchers clearer insights on why some interventions do and do not work which is invaluable for future intervention development, optimisation, and evaluation.

4.5. Conclusion

The cultural adaption of Dove Confident Me: Single Session for use in Indonesian state schools via UNICEF Indonesia's Life Skills Education was found ineffective in improving study outcomes though it was broadly acceptable with students and facilitators. While we did not find any positive effects of the lesson, we found no evidence that the lesson caused any harm. The disparate implementation fidelity results make it difficult to understand how the intervention may have worked if it had consistently been delivered as intended. Results should be contextualised within the difficult circumstances of the ongoing COVID-19 pandemic during which the trial took place. Learnings detailed stand to help guide future school-based body image intervention work in LMICs.

Data sharing

Data will be shared after approval by the corresponding author, following a reasonable submitted request. The study protocol and statistical analysis plan are publicly available.

CRedit authorship contribution statement

NC – Conceptualisation; Project administration; Writing – first draft; Writing – review & editing; Funding acquisition; Supervision. MB – Writing – first draft; Writing – review & editing; Formal Analysis; Data Curation. KG – Conceptualisation; Methodology; Writing – review & editing, Funding acquisition. KN – Resources; Project administration; Writing – review & editing. CG – Methodology; Formal Analysis. CR – Resources; Writing – review & editing. ZH – Resources; Writing – review & editing. LS – Resources; Writing – review & editing. BE – Resources; Writing – review & editing. PW – Methodology; Writing – review & editing; Supervision. PD – Methodology; Conceptualisation; Writing – review & editing; Supervision; Funding acquisition (lead). HW - Writing – review & editing; Supervision.

Declaration of Competing Interest

PD is an independent consultant to the Dove Self-Esteem Project and was on the Dove Self-Esteem Project Global Advisory Board from 2013 to 2016. The authors declare no other conflicts of interest in relation to this work.

Data Availability

Data will be made available on request.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.bodyim.2023.101654](https://doi.org/10.1016/j.bodyim.2023.101654).

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