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# THE EFFECT OF DIGITAL FLIPCHART TRAINING ON SPECIAL SCHOOL TEACHERS' KNOWLEDGE ABOUT REPRODUCTIVE HEALTH EDUCATION FOR ADOLESCENTS WITH DISABILITIES

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## ABSTRACT
Adolescents with disabilities often encounter barriers in accessing reproductive health information. Teachers in special education settings play a crucial role in delivering such education; however, many lack adequate knowledge and appropriate teaching media. This study aimed to determine the effect of digital flipchart training on special school teachers knowledge about reproductive health education for adolescents with disabilities. A pre-experimental study with a one-group pre-test–post-test design was conducted among 160 teachers from special schools (SLB) in Bantul regency. A pre-experimental study with a one-group pre-test–post-test design was conducted among 160 teachers from special schools (SLB) in Bantul Regency. The intervention consisted of a one-day training session using a digital flipchart containing interactive reproductive health materials adapted for students with disabilities. Teachers' knowledge was measured using a 20-item questionnaire that had demonstrated good content validity through expert review and high internal consistency (Cronbach's $\alpha = 0.85$) before and after the training. Data were analyzed using the paired sample t-test. Results: The mean pre-test score was $5.40 \pm 0.59$, which increased to $5.63 \pm 0.63$ in the post-test ($t = 2.04$, $p = 0.048$). These findings indicate that the LEBAD-based training effectively enhanced participants' understanding of reproductive health education for students with disabilities. Digital flipchart training effectively enhances teachers' knowledge and supports inclusive reproductive health education in special schools.

Keywords: digital flipchart; disability; knowledge; reproductive health; special schools; teachers

## INTRODUCTION
Adolescents with disabilities represent one of the most vulnerable and marginalized populations in terms of sexual and reproductive health (SRH) rights (Ganle et al., 2020). According to the World Health Organization (WHO, 2022), more than 1.3 billion people equivalent to 16% of the global population live with some form of disability. Despite this significant figure, adolescents with disabilities continue to experience barriers in accessing SRH information and services due to physical barries inaccesible health facilities and lack of adapted material (Braile, sign lenaguange, easy-read formats) limit acces to information and services (Qi et al., 2023), cognitive, and communication limitations few health care workers are trained in sign languange or alternative communication, making it difficult for adolescents with hearing or intellectual disabilities to rceive appropriate care (Mathabela, Madiba and Modjadji, 2024).

These barriers not only restrict their understanding of bodily changes and sexual health but also increase their susceptibility to sexual exploitation and abuse. In Indonesia, the issue remains underrecognized within the education and health sectors, creating a critical gap in inclusive SRH education. In Indonesia, adolescents with disabilities especially those with hearing impairments have insufficient SRH Knowledge due to lack adapted curricula, limited teacher training, and few health workers skilled in sign languange. School health units are underutilized, and most information is not accessible in preferred formats. This result in low awareness, poor health behaviors, and increased

vulnerability (Saparini, Simbolon and Ningsih, 2023). Adolescents with disabilities are among the most marginalized in SRH, facing physical, communicative, and social barriers that limit their access to essential information and services. Addressing these challenges requires inclusive curricula, trained educators and health workers, accessible materials, and targeted policy interventions to ensure equitable SRH rights and protections.

Special needs school teachers often lack speciallized training and effective tools for delivering sexual and reproductive health (SRH) education. Tradition methods such as lectures and printed booklets are generally less effective for students with hearing, intelectual, or developmental disabilities, who require more visual, interactive and repetitive instructional media to ensure comprehension (Fauziyah, Yusuf and Yuwono, 2023). These students require instructional media that is more visual, interactive, and repetitive to ensure comprehension. Previous studies indicate that the use of digital and visual media can significantly enhance learning engagement and retention among learners with special needs (Colarossi *et al.*, 2023).

Reports of unintended pregnancy and sexual harrasment among adolescents with disabilities in Bantul regency highlight the urgent need for accessible, contextualized sexual and reproductive health (SRH) education. While local regulation such as regional regulation no. 11/2015 exist to protect persons with disabilities, their implementation in school remains limited, leaving significant gaps in SRH knowledge and protection for this vulnerable group. Research from various contexts demonstrates that collaboration between educational institutions and the health sector is highly effective in improving SRH outcomes Integrating comprehensive sexuality education (CSE) in schools and linking it with accessible, adolescent-friendly SRH services at health facilities leads to significant reductions in unintended pregnancies and better protection against sexual exploitation (Mbizvo *et al.*, 2023), Training both teachers and healthcare workers to be responsive to the specific needs of adolescents including those with disabilities ensures that SRH information and services are both available and adapted to diverse learning need (Kamal, 2018). Involving healthcare personnel as educators and trainers for teachers and parents creates a holistic, multi-sectoral approach that addresses knowledge gaps and supports safe practices (Leekuan *et al.*, 2022).

LEBAD addresses key barriers in sexual and reproductive health (SRH) education for students with disabilities by integrating simple text, clear illustrations, and audio narration making sensitive topics more accessible and engaging. This approach aligns with research showing that digital and interactive media significantly improve knowledge, engagement, and retention among adolescents with disabilities, especially when materials are adaptable to various learning needs (Utami, Nurwati and Lestari, 2024), LEBAD's multimodal format (visual, audio, and text) accommodates students with different disabilities, including those with hearing, visual, or intellectual impairments (Fitria and Nurhayati, 2022), By providing ready-to-use, adaptable content, LEBAD helps teachers overcome discomfort and lack of training in delivering SRH topics, a challenge frequently reported in special needs education (Wuryandari et al., 2025), Interactive and visual media, such as those used in LEBAD, have been shown to increase students' knowledge about reproductive health, improve attitudes, and support self-protection against sexual violence (Kurniasari and Frenty Nurkhalim, 2023). LEBAD exemplifies best practices in inclusive SRH education by offering accessible, interactive, and adaptable content. Evidence supports that such digital tools can bridge communication gaps, empower teachers, and promote safer, more informed behaviors among students with disabilities.

Community service programs that train Sekolah Luar Biasa (SLB; special schools) teachers using digital tools such as the LEBAD digital flipchart have been recognized as effective strategies for strengthening teachers' capacity to deliver reproductive health education for adolescents with disabilities. Previous studies have demonstrated that interactive and accessible digital media can improve teachers' knowledge and confidence in addressing sensitive sexual and reproductive health

(SRH) topics (Ma et al., 2022), promote the use of innovative multimodal learning resources that enhance students' engagement and comprehension (Goli, Rahimi and Goli, 2022), and strengthen collaboration among schools, healthcare providers, and local stakeholders to support sustainable inclusive SRH education (Greene et al., 2024). However, evidence regarding the effectiveness of digital flipchart-based training specifically designed for special school teachers in Indonesia remains limited. Therefore, this study aimed to determine the effect of LEBAD digital flipchart training on the knowledge of special school teachers regarding reproductive health education for adolescents with disabilities in Bantul Regency.

## METHOD

This study employed a pre-experimental one-group pre-test–post-test design involving teachers from special schools (Sekolah Luar Biasa/SLB) in Bantul Regency who teach adolescents with disabilities. A total of 160 teachers were recruited using the total sampling technique. The intervention consisted of a one-day digital flipchart (LEBAD) training program covering adolescent puberty, reproductive health, personal hygiene, consent, and the prevention of sexual abuse. The training was delivered through lectures, demonstrations, discussions, and guided practice sessions to familiarize teachers with the use of the digital flipchart as an educational medium. Teachers' knowledge was assessed using a six-item multiple-choice questionnaire developed based on reproductive health education competencies for adolescents with disabilities. The instrument demonstrated good content validity through expert review and acceptable internal consistency reliability (Cronbach's $\alpha = 0.85$). Each correct answer was scored as one point, resulting in a total knowledge score ranging from 0 to 6, with higher scores indicating better knowledge. Knowledge was measured twice: before the intervention (pre-test) and immediately after the completion of the training (post-test). Descriptive statistics were used to summarize participant characteristics and knowledge scores. The normality of the data was assessed prior to analysis, and differences between pre-test and post-test scores were analyzed using the paired-sample t-test, with the level of statistical significance set at $p < 0.05$.

## RESULTS AND DISCUSSION

Most respondents were female (70%), aged 25–50 years, with an average teaching experience of 10 years. For knowledege score The mean pre-test knowledge score was 5.40 (SD = 0.59), increasing to 5.63 (SD = 0.63) in the post-test. Paired sample *t*-test results indicated a statistically significant improvement in knowledge after the training ($t = 2.04$; $p = 0.048$). The training improved understanding of inclusive reproductive health education and increased confidence in using digital media.

Table 1.
Analysis Data

| Variable | Mean ± SD (Pre-test) | Mean ± SD (Post-test) | p-value |
|---|---|---|---|
| Knowledge Score | 5.40 ± 0.59 | 5.63 ± 0.63 | 0.048 |

The analysis shows a modest but statistically significant improvement in the teachers' knowledge scores following the training. Although the numerical increase appears small due to the limited range of scores (maximum = 6), the consistent upward trend across participants suggests that exposure to the digital flipchart effectively enhanced conceptual understanding and awareness of reproductive health education for students with disabilities.

The findings show that digital flipchart (LEBAD) training effectively improved teachers' knowledge. The results of the paired sample *t*-test demonstrated a significant increase in teachers' mean knowledge scores from 5.40 ± 0.59 before the training to 5.63 ± 0.63 after the intervention ($p = 0.048$). This indicates that exposure to digital and interactive media enhanced participants' understanding of reproductive health education for students with disabilities. This finding aligns with previous research emphasizing that interactive digital media improves learning outcomes in health education. Several studies have reported that digital tools - such as flipcharts, videos, and multimedia learning materials - are effective in improving comprehension and retention among educators and learners in health-related topics. These media promote engagement, interactivity, and multisensory learning experiences

that support long-term knowledge acquisition. The visual and adaptive characteristics of the LEBAD (lembar balik digital) flipchart make it particularly suitable for inclusive education. The combination of simple text, clear illustrations, and accessible design enables teachers to deliver reproductive health material that is understandable to students with diverse disabilities, including hearing, visual, or intellectual impairments. This multimodal approach supports differentiated learning and ensures that all students can access key messages about health and self-protection.

The results highlight the importance of teacher empowerment as key agents in inclusive health promotion. Improving teachers' knowledge and confidence through digital training equips them to act as frontline educators who can advocate for and implement inclusive health education in special schools. Strengthening teachers' capacity directly contributes to improving students' awareness, safety, and overall well-being. This study used a single-group pre-test–post-test design without a control group, which limits causal interpretation. Additionally, knowledge was measured immediately after the training, so long-term retention and behavioral changes were not assessed. Future studies should employ experimental or quasi-experimental designs with follow-up evaluations to examine the sustainability of learning outcomes and the broader impact on teaching practices.

## CONCLUSION

In conclusion, the training on the use of the digital flipchart (LEBAD/Lembar Balik Digital) significantly improved the knowledge of special school teachers about reproductive health for adolescents with disabilities. The use of this interactive and accessible medium proved to be an effective strategy to strengthen teachers' capacity in delivering inclusive reproductive health education. Continuous training and integration of digital learning tools are recommended to sustain knowledge improvement and promote inclusive health education practices.

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